SOME RELATIONSHIPS BETWEEN SIZE OF SCHOOL AND ACADEMIC ACHIEVEMENT OF HIGH SCHOOL SENIORS IN FLORIDA

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TABLE OF CONTENTS

		Page
ACKNOWLEDGMENTS		ii
LIST OF TABLES		v
CHAPTER		
I.	THE PROBLEM	1
	Introduction	1
	Statement of the Problem	4
	Previous Studies	5
	Sources of Data	15
	Scope	15
	Procedure	16
	Limitations	18
II.	THE ANALYSIS OF ACHIEVEMENT OF SENIORS IN ALL SIX-YEAR HIGH SCHOOLS	22
	The Contingency Table	23
	Psychological Scores	34
	Achievement by Size of School without Considering Intelligence Level	36
	Achievement by Size of School of Three Intelligence Categories	39
	Summary and Conclusions	44
III.	THE ANALYSIS OF ACHIEVEMENT OF SENIORS IN SENIOR HIGH SCHOOLS	47
	Part I	
	Distribution of Psychological Scores	49
	Achievement by Size of School without Considering Intelligence Level	51
	Achievement by Size of School of Three Intelligence Levels	53
	Part II	
	Distribution of Psychological Scores	59
	Achievement by Size of School without Considering Intelligence Level	61
	Achievement by Size of School of Three Intelligence Levels	63

TABLE OF CONTENTS (Continued)

CHAPTER		Page
	Summary and Conclusions	67
IV.	THE ANALYSIS OF ACHIEVEMENT OF SENIORS IN TWELVE-YEAR SCHOOLS.	72
	Distribution of Psychological Scores.	74
	Achievement by Size of School Without Considering Intelligence Level.	74
	Achievement by Size of School of Three Intelligence Categories.	77
	Summary and Conclusions	79
V.	THE ANALYSIS OF ACHIEVEMENT OF THE SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS	83
	Distribution of Psychological Scores.	83
	Achievement by Size of School without Considering Intelligence Levels	86
	Achievement by Size of School of Three Intelligence Categories	88
	Summary and Conclusions	90
VI.	SUMMARY AND CONCLUSIONS	95
	Summary	95
	Conclusions	100
	Implications.	108
APPENDIX.		111
BIBLIOGRAPHY.		332
BIOGRAPHICAL DATA		338

LIST OF TABLES

Table		Page
I.	The Test Scores Included in Each Psychological or Subject Area Category and the Per Cent of Seniors in Each.	19
II.	The Test Scores Included in Each Psychological or Subject Area Category and the Per Cent of Seniors in Each, Merged Tables	20
III.	The Number of Schools, Number of Seniors Tested, and Average Daily Membership of Six-Year Schools	24
IV.	Contingency Distribution of Psychological Test Scores for All Seniors in Six-Year Schools, 1951	26
V.	Table of Chi-Square.	29
VI.	The Method of Evaluating the Chi-Square Significances Tests of Interdependence Between School Size and Achievement	32
VII.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Psychological Scores for All Seniors in Six-Year Schools.	35
VIII.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for All Seniors in Six-Year Schools	37
IX.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Above Average Psychological Category in Six-Year Schools	40
X.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Average Psychological Category in Six-Year Schools	42
XI.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Below Average Psychological Category in Six-Year Schools.	43

LIST OF TABLES (Continued)

Table		Page
XII.	The Number of Schools, Number of Seniors Tested, and Average Daily Membership of Senior High Schools - Part I	48
XIII.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Psychological Scores for All Seniors in Senior High Schools - Part I	50
XIV.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for All Seniors in Senior High Schools. . .	52
XV.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Above Average Psychological Category in Senior High Schools - Part I	54
XVI.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Average Psychological Category in Senior High Schools - Part I	55
XVII.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Below Average Psychological Category in Senior High Schools - Part I	56
XVIII.	The Number of Schools, Number of Seniors Tested, and Average Daily Membership of Senior High Schools - Part II	58
XIX.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Psychological Scores for All Seniors in Senior High Schools - Part II	60
XX.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for All Seniors in Senior High Schools - Part II	62

LIST OF TABLES (Continued)

Table		Page
XXI.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Above Average Psychological Category in Senior High Schools - Part II.	65
XXII.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Average Psychological Category in Senior High Schools - Part II	68
XXIII.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Below Average Psychological Category in Senior High Schools - Part II.	69
XXIV.	The Number of Schools, Number of Seniors Tested, and Average Daily Membership of Twelve-Year Schools	73
XXV.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Psychological Scores for All Seniors in Twelve-Year Schools . .	75
XXVI.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for All Seniors in Twelve-Year Schools.	76
XXVII.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Above Average Psychological Category in Twelve-Year Schools	78
XXVIII.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Average Psychological Category in Twelve-Year Schools.	80
XXIX.	Summary of Chi-Square Significance Tests of Interdependence between School Size and Achievement for the Below Average Psychological Category in Twelve-Year Schools.	81

LIST OF TABLES (Continued)

Table		Page
XXX.	The Number of Schools, Number of Seniors Tested, and Average Daily Membership of Junior-Senior High Schools.	84
XXXI.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Psychological Scores for All Seniors in Junior-Senior High Schools.	85
XXXII.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for All Seniors in Junior-Senior High Schools	87
XXXIII.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Above Average Psychological Category in Junior-Senior High Schools	89
XXXIV.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Average Psychological Category in Junior-Senior High Schools.	91
XXXV.	Summary of Chi-Square Significance Tests of Interdependence Between School Size and Achievement for the Below Average Psychological Category in Junior-Senior High Schools	92

CHAPTER I

THE PROBLEM

Introduction

Educators have for some time been concerned with the merits of large schools versus small schools. The evidence seems to be reasonably conclusive in favor of large schools in the area of financial efficiency. The National Conference on the Financing of Education[1] found that the cost per pupil in high schools having fewer than 100 pupils approximates twice the cost per pupil in high schools having 200 pupils. Large schools tend to offer more comprehensive programs of education. This means more courses, better equipment, specialized services, better qualified teachers, etc. The evidence concerning achievement, however, is not clear. There is not sufficient evidence to conclude that pupils in large schools achieve better than pupils in small schools. Research in the area of achievement is always confronted with the problem of defining achievement so that it may be measured objectively and yet include all its connotations. Cook[2] made the following statement in regard to achievement and intelligence testing:

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[1]National Conference on the Financing of Education, Report of the National Conference on the Financing of Education (Washington, D. C.: National Education Association, 1933), p. 14.

[2]Walter W. Cook, "The Nature of Achievement and Meaning of Its Measurement," The Encyclopedia of Educational Research (Walter S. Monroe, editor) (New York: Macmillan Company, 1950), p. 1145.

Although the terms "achievement" and "achievement testing" have been widely used for a number of years little attention has been given to the definition of achievement. In the field of measurement, achievement is generally used in the sense of acquired "ability to do, capacity to do, or tendency to do." But a person's performance (behavior) is conditioned by the attending circumstances, and acquired abilities, capacities, and tendencies may change. Hence a more complete definition of achievement would include specification relative to the circumstances, including ties, under which the designated ability to do, capacity to do, or tendency to do is to be thought of as functioning. The specified circumstances may be those attending the test performance, but usually there is the implication that the measure of achievement (test score) is a description of the performance to be expected at some future time.

Since achievement is generally used in the sense of acquired abilities, capacities, and tendencies, the relatively high correlations between intelligence-test scores and achievement-test scores in reading, arithmetic and other academic subject-matter areas has been interpreted by some as evidence that the achievement-test performance in such cases represents intelligence plus acquired abilities, capacities and tendencies. It must be remembered, however, that intelligence is never measured directly; intelligence tests are simply achievement tests of a special type from which intelligence is inferred. The intelligence test is an achievement test measuring the ability to perform successfully in situations involving a broad sample of abstract relationships and problem-solving abilities which, it is assumed, everyone taking the test has had an equal opportunity to learn. Since differences in achievement in these more permanent learnings are found, it is inferred that native capacity is responsible for them. Such an inference is correct to the extent that the basic assumption of equal opportunity to learn is true and to the extent that capacity for learning measured by the test may be labeled intelligence. Equal opportunity to learn implies not only equal environmental conditions but also equal sensory capacities, energy, vitality, interests, motivation, etc. It is a well-established fact that capacity for achievement in any area may be inferred more accurately from an achievement test in that area than from a general intelligence test, if the assumption of equal opportunity to learn is verified. Hence, achievement tests are always measures of acquired abilities, capacities, and tendencies, from which intelligence or capacity to learn may sometimes be inferred.

The purpose of this study is to investigate the relationships between the size of schools and achievement of high school seniors as measured by the American Council on Education cooperative tests in English, social studies, natural sciences, and mathematics. The scores on these tests are here taken as a measure of academic achievement. The American Council on Education Psychological Test scores were used as the measure of intelligence to group the seniors into groups of similar intelligence levels. In order to avoid the controversy over the merits of "intelligence testing" the results of the study are presented (1) by size of school and achievement in English, social studies, natural sciences, and mathematics without regard to intelligence groupings, and (2) by size of school and achievement in English, social studies, natural sciences, and mathematics considering different psychological groupings.

If this study finds that achievement of seniors in English, social studies, natural sciences, and mathematics is independent of the size of school or varies directly with the size of school, then there may be important inferences relative to the relationships between the expanding educational program and achievement in the fundamental subjects. There are those who contend that the fundamental subjects are being neglected in a broad educational program.[1] Educational leaders need objective evidence to determine whether or not this is true.

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[1] J. E. Hankins, "The Education of Future Scientists," Paper prepared for presentation at Florida Academy of Sciences (Mimeographed).

Woodham[1] and others have shown a direct relationship between school size and breadth of educational opportunity. Is there also a direct relationship between school size and achievement in English, social studies, natural sciences, and mathematics?

Statement of the Problem

This study is an investigation of the relationships between the size of secondary schools and the academic achievement of the seniors in six-year, three-year, and twelve-year white schools of Florida. The study is specifically concerned with answering the following questions:

1. Are psychological scores distributed independently of the size of school?
2. When intelligence is not considered, is achievement in English, social studies, natural sciences, and mathematics independent of the size of school?
3. When seniors are grouped according to psychological scores, is achievement in English, social studies, natural sciences, and mathematics independent of the size of school?
4. If achievement is related to school size, what school size groups achieve better than others (1) when intelligence is not considered, and (2) when seniors

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[1]William Jesse Woodham, Jr., "The Relationship Between the Size of Secondary Schools, the Per Pupil Cost, and the Breadth of Educational Opportunity." Doctor's thesis, University of Florida, 1951, pp. 176-177.

are grouped according to their psychological scores?

5. The most frequently recommended minimum secondary school size is 300. Is this a good minimum from the standpoint of achievement of seniors?

Previous Studies

The relationship between size of school and some measures of quality and efficiency have been subjected to considerable investigation. A brief review of some of the more important of these investigations is presented in the paragraphs immediately following.

Strayer and Englehardt[1] (1924) reported several studies showing unit costs in contrast with building size. In Springfield, Massachusetts, they reported that the cost for total current expenses per pupil increased very rapidly as the average attendance became less than 250. The sharpest increase in cost per pupil in average daily attendance occurred in schools having fewer than 120 pupils. Below 200 the line of the cost curve rose almost vertically. The curve was practically level after 500, both for current expenses as a whole and for instructional service.

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[1]George D. Strayer and N. L. Englehardt, Report of Survey in Springfield, Massachusetts (Springfield: Press of Springfield Printing and Binding Company, 1924), pp. 120-125.

Meehlman[1] (1924) questioned the economy of the instructional efficiency of any plant accommodating fewer than 800 pupils. He favored 800 as a minimum, 1400 as a mean, and 2400 as a maximum enrolment. Meehlman's analysis of Detroit's instructional program showed that the most efficient use of rooms, equipment, and specialized personnel was reached with a 2100 membership. Dudley[2] (1925) found the optimum size of a junior high school based on economic use of special rooms ranges from 1200-2500 pupils. He felt, however, that for the senior high school no optimum size could be given.

Spaulding[3] (1927) concluded schools with less than twenty-five pupils per grade, among other things, could not offer any subjects as elective subjects without excessive costs.

Ford[4] (1930) showed that the decrease in per pupil cost with increase in size of high school is not significant after an enrolment of 300 is reached, but he held that schools may become too large when personality is lost in numbers.

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[1]Arthur B. Meehlman, Child Accounting (Detroit: Fravus Brothers Press, 1924), p. 36.

[2]L. Lelaus Dudley, Location of City School Plants (Cambridge, Harvard University Press, 1925), p. 45.

[3]Francis T. Spaulding, The Small Junior High School (Cambridge: Harvard University Press, 1927), p. 24.

[4]Willard S. Ford, "Are Large or Small Unit of School Administration Preferable?" American School and University (New York: American School Publishing Corporation, 1930), Vol. 3, 26-29.

Ferries[1] (1933) recommended that six-year schools in the future have a pupil enrolment of at least 250-400 pupils. Schools smaller than this are educationally inadequate.

Dawson[2] (1934) concluded the minimum size of satisfactory attendance units to be 210 pupils enrolled in six-year high schools, for a junior high school 245 pupils, and for a senior high school 175 pupils. Dawson's evidence indicated to him that when schools were smaller than these standards they were less effective than they should be (1) if educational objectives were to be reached, (2) in their type of grade organization, (3) in their elementary and high school curricula, (4) their pupil teacher ratios, (5) in the size of their high school classes, (6) in age-grade and grade progress status of pupils, (7) achievement as measured by standardized tests, (8) in the training and experience of teachers, (9) in the length of school term, and (10) in their costs per pupil.

Cummins[3] (1934) summarized detailed data for specific states and generalized for the nation as a whole for very small schools. He

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[1]Henry H. Ferriss, "Curriculum Demands on the Secondary School of the Future Affecting the Size of the Local School District," Education, 53 (January, 1933), 297.

[2]Howard A. Dawson, Satisfactory Local School Units, Field Study Number 7 (Nashville, Tennessee: Division of Surveys and Field Studies, George Peabody College for Teachers, 1934), p. 22.

[3]Walter H. Cummins, Economies Through the Elimination of Very Small Schools, U. S. Office of Education Bulletin No. 3 (Washington, D. C.: Government Printing Office, 1934), p. 23.

found that almost invariably the per pupil costs were extremely high in the smallest schools; that these costs fall rapidly as one passes from the smallest to the next larger schools; and that the effect of the increases in numbers of pupils upon costs becomes less and less apparent as the schools become larger.

Seyfert[1] made an exhaustive comparison of large and small schools. His study was confined to six-year schools. He found (1) ability grouping was directly affected by the size of school, (2) the number of different curriculums offered was indirectly affected to a greater or less degree by size of the student body, (3) in the small high school little if any attention was given to supervision, and (4) size influenced the number of activities that were maintained. Seyfert suggested that perhaps the best way to improve the small school is to pay its administrator enough to obtain a high type of leadership.

Riddle[2] (1937) studied ten large and the small schools in Alabama rural districts. He found larger schools superior in staff, buildings, equipment, curriculum, economy of cost per pupil, and per cent of graduates entering college. The large and the small

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[1]Warren C. Seyfert, School Size and Efficiency, Harvard Bulletins in Education, No. 19 (Cambridge: Harvard University Press, 1937), p. 291.

[2]John I. Riddle, Six-Year Rural High School, Contribution to Education, No. 737 (New York: Teachers College, Columbia, 1937), pp. 94-95.

schools were approximately alike in student personnel, progress through school, and achievement of pupils.

Hawley and Mather[1] (1937) made a questionnaire study of 135 small high schools in California where 200 of the 397 high schools of the state had fewer than 350 pupils. Their findings revealed a gradual increase in desirable features as the enrolments increased in size.

The Regents' Inquiry[2] into the Character and Cost of Education in the State of New York concluded that no high school with an enrolment much below 300 pupils can be good in more than one or two phases of the program, unless it is an unduly expensive school.

The Washington State Planning Council[3] in 1938 found that high schools having fewer than 50 pupils cost 67 per cent more per pupil than high schools having 150-299 pupils. Moreover, there was a constant decrease in cost per pupil until enrolments reached 1500.

Breterniz[4] (1940) studied 87 high schools in Nebraska classified as to size and type. They ranged in enrolments from

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[1]Jesse M. Hawley and Irving A. Mather, "Small High Schools in California," California Journal of Secondary Education, 12 (February, 1937), 93-100.

[2]Francis T. Spaulding, High School and Life, The Regents' Inquiry (New York: McGraw-Hill Book Company, Inc., 1938), p. 215.

[3]Washington State Planning Council, A Survey of the Common Schools of Washington (Olympia, Washington: The Council, 1938), p. 87.

[4]Louis A. Breterniz, "High School Organization in Nebraska," Nebraska Educational Journal, 20 (January, 1940), 18, 25.

76-1000 students. The only real differences were found to exist between schools grouped as to size in which the large schools were uniformally superior. There were few or no differences between three-year high schools, selected four-year high schools, and six-year high schools, when the factor of size was controlled.

Hoover[1] (1941) pointed out that although many educational leaders have deplored the existence of small high schools, typical graduates of large high schools are not at all convinced that high schools should be large. Indeed, they are as undecided about the matter as typical graduates of smaller high schools. According to Hoover the accusation that those who live on farms have the least progressive attitudes appears not to be founded on fact. Their attitudes, generally, were just about as progressive or conservative as those whose fathers were engaged in any other occupational pursuits.

Booth[2] (1946) in his study of schools in Idaho showed that schools having fewer than fifty pupils cost on the average 53 per cent more per pupil than the schools having 300 or more pupils.

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[1]F. W. Hoover, "The Relationship Among Attitudes of University of Nebraska Freshmen Toward Twelve Major Issues in Secondary Education and Seven Background and Status Factors," Doctor's thesis, University of Nebraska, 1941.

[2]John M. Booth, State School Administration in Idaho, (Boise, Idaho: Idaho Education Association, March, 1946), p. 202.

The Florida Citizens Committee[1] (1947) concluded from the results of The California Mental Maturity Tests and the Stanford Achievement Tests administered in nine selected counties of Florida:

> 1. There is a consistent tendency for the median standing of the pupils in each of the selected counties to parallel that county's standing on income per instruction unit. This seems to mean largely that the pupils in the more wealthy counties have had better background and opportunities. The differences in the highest and lowest income counties are large. In the same grades, the pupils in the highest income counties average more than one year higher than those in the lowest income counties. It is significant that this difference becomes more pronounced in the later grades.
>
> 2. There is a slight tendency for the pupils in the larger schools to show superior ability to those in the smaller schools, even in the same county.
>
> 3. In all the participating counties, the range is ~ ability of those in the same grade is quite large. Thus all the counties are confronted with the problem of adjusting their school offerings to a wide range of abilities.
>
> . . . .
>
> 5. The median mental ability of the white pupils in the participating counties compares quite favorably with the national median. The pupils in the high income counties are about one-half to one year above the national median; the average income counties tend to agree with the national median; and the low income counties are about one-half to one year below the median.

The Commission on School District Reorganization[2] (1948) concluded that where population and topographical factors permit,

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[1]Florida Citizens Committee on Education, Education and the Future of Florida (Tallahassee, Florida: The Committee, 1947), p. 58.

[2]National Education Association, The National Commission on School District Reorganization, Department of Rural Education, Your School District (Washington, D. C.: The Association), p. 23.

the minimum size of any type of high school should be at least 300 pupils, or 75 pupils in each age group, with a minimum of twelve full-time teachers.

Nemzik and Chisholm[1] (1948) in their study of school districts in Nebraska concluded that small enrollments mean:

1. Significantly higher cost per pupil
2. A very narrow offering of subjects of study
3. Poor library and laboratory facilities
4. Frequently a low level of teacher preparation
5. Many teachers teaching school work for which they have little or no preparation.

The Council of State Governments[2] reported in the Forty-Eight State School Systems seventeen states had more than 50 per cent of their high schools enrolling fewer than 100 pupils. The situation in the nation as a whole is summarized in the following quotation from the Forty-Eight State School Systems:[3]

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[1]O. Nemzik and Leslie L. Chisholm, Nebraska Looks at Her Districts (Lincoln, Nebraska: University of Nebraska Press, 1948), p. 6.

[2]Edgar L. Morphet and Francis S. Chase (The Council of State Governments), The Forty-Eight State School Systems, (Chicago: The Council of State Governments, 1949), Table 22, p. 195.

[3]Ibid., p. 66.

> In six states a majority of the high schools enrol 300 pupils or more, and in a number of other states high schools enrolling fewer than 100 pupils have practically disappeared except in a few isolated communities. There are still a considerable number of states, however, in which the majority of high schools enrol fewer than 100 pupils, despite evidence that a comprehensive program of education can be offered in such small schools only at an excessive cost per pupil, if at all. There are still 3,750 high schools in the forty-eight states enrolling 50 pupils or fewer and over 9,000 enrolling 100 pupils or fewer.

Woodham[1] concluded that the minimum size in terms of adequate scope of educational opportunity for six-year secondary schools is 500 pupils. For three-or-four-year schools, he recommended 450 pupils as a minimum. Woodham suggested that secondary schools should not be divided unless their membership exceeds 1500.

Some other studies that have consistently shown that smaller schools cost more per pupil are: Hannings[2], Holmstedt[3], Little[4], Grace and Noe[5], Mort[6], Virginia State Chamber of Commerce[7],

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[1]Woodham, op. cit., pp. 176-177.

[2]S. F. Hannings, "Cost and Offerings of California High Schools in Relation to Size," Journal of Educational Research, XXIV (December, 1931), 363-364.

[3]Raleigh W. Holmstedt, "Factors Affecting the Organization of School Attendance Units," Bulletin of the School of Education, Indiana University, X, No. 3 (June, 1934).

[4]Harry A. Little, Potential Economies in the Reorganization of Local School Attendance Units (New York: Teachers College, Contribution to Education No. 628, 1934), pp. 23-31.

[5]A. G. Grace and G. A. Noe, State Aid and School Costs (New York: McGraw Hill Book Company, 1938), p. 182.

[6]Paul R. Mort and Walter C. Reusser, Public School Finance (New York: McGraw Hill Book Company, 1941), p. 238.

[7]Virginia State Chamber of Commerce, Committee on Education, Opportunities for the Improvement of High School Education in Virginia (Richmond, Virginia: Virginia State Chamber of Commerce, 1944), p. 5.

Aderhold[1], McLure[2], Carpenter[3], Minnesota Institute of Government Research[4], the California Commission on School Districts[5], and Brewton[6].

These studies emphasize the financial efficiency of large schools, but do not clarify the relationships between size of school and achievement. It is the purpose of this study to investigate the relationships between the size of school and achievement as measured by the American Council tests in English, social studies, natural sciences, and mathematics. Do the high school seniors in large schools achieve better than seniors in small schools? When differences in intelligence are considered, do seniors in large schools achieve better than seniors in small schools?

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[1]O. C. Aderhold, A Survey of Public Education of Less Than College Grade in Georgia (Atlanta: A report to the General Assembly of Georgia by its Special Committee on Education, January 1, 1947, p. 192.

[2]William F. McLure, Financing Public Education in Mississippi (University, Mississippi: Bureau of Educational Research, University of Mississippi, 1948), p. 71.

[3]O. C. Carpenter, Criteria for Determining the Adequacy of School Districts in California (Los Angeles, California: Doctor's thesis, University of Southern California, 1948).

[4]The Minnesota Institute of Government Research, Improving Education in Minnesota by Reorganizing Local School System (Saint Paul, Minnesota: The Institute, 1949), p. 11.

[5]The California Commission on School Districts, Findings and Recommendations of the State Commission on School Districts (Sacramento, California: The Commission, 1949).

[6]John E. Brewton, et al., Public Education of South Carolina (Nashville, Tennessee: Division of Survey and Field Services, George Peabody College for Teachers, 1948), p. 170.

Sources of data

The data used in the study were taken from the following sources: (1) records of the Board of University Examiners, University of Florida, Gainesville, Florida, on the 1949-50 and 1950-51 American Council on Education Cooperative Tests; (2) The Florida Educational Directory published by the State Department of Education, Tallahassee, Florida, October 1949 and October 1950; and (3) records on file in the Research and Information Section, Department of Education, Tallahassee, Florida.

Scope

The study is an analysis of 109,110 test scores made by 22,057 seniors in Florida white secondary schools in 1950 and in 1951. One hundred and seventy-eight of the 209 white secondary schools in Florida in 1950 and 176 of the 208 in 1951 were included in the study.

The seniors were placed in psychological categories according to their scores on the American Council on Education Psychological Examination. The American Council Cooperative Tests in English, social studies, natural sciences, and mathematics were used to measure achievement in these areas.

The size of the schools ranged from a low of 43 to a high of 2,625 in average daily membership, and the number of seniors tested at a school ranged from 2 to 585.

Each of the sixty-seven county school administrative units of Florida is represented by one or more schools.

Procedure

The chi-square[1] statistic was used to test the following null hypotheses:

1. Psychological scores are distributed independently of school size in senior high schools, junior-senior high schools, and twelve-year schools.
2. When intelligence is not considered, achievement in English, social studies, natural sciences, and mathematics is independent of school size.
3. When seniors are grouped according to psychological scores, achievement in English, social studies, natural sciences, and mathematics is independent of school size.

A chi-square significant at the .05 level of confidence is generally considered sufficiently large to reject the null hypothesis. This means that a null hypothesis may be rejected when a chi-square as large as the obtained chi-square would occur by chance only once in twenty trials. Once the null hypothesis has been rejected, the

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[1]The chi-square statistic is so well established in statistical literature, the discussion of the statistic will be confined to how it is used in this study. A good discussion of chi-square may be found in: Garrett, Henry E., Statistics in Psychology and Education. New York: Longmans, Green, and Company, 1947., p. 211.

direction of the differences in the observed and expected[1] frequencies may be determined by inspection.

The study was originally designed using contingency[2] tables containing twelve rows of school size groups and five columns of psychological categories or subject area achievement categories. Three factors were used in selecting the twelve school size groupings, (1) the number of schools in each group, (2) the total membership in each group, and (3) the number of seniors tested in each group. Consideration was given to dividing psychological scores into deciles, quartiles, or identical score groupings. Early investigation indicated that any of these classifications would produce many low expected frequencies that would affect the validity of the chi-square statistic. Since Terman[3] and described intelligence as normally distributed the decision was then made to investigate thoroughly a normal distribution, i.e., five psychological categories with approximately 7 per cent very superior, 24 per cent superior, 38 per cent average, 24 per cent inferior, and 7 per cent very inferior. The achievement categories in English, social studies, natural sciences, and mathematics were also selected to approximate a normal

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[1]The computation of expected frequencies is discussed in detail in Chapter II.

[2]A contingency table may be thought of as a double entry or two-way table in which entries are classified in two ways. As used in this study, the seniors are classified by size of school and psychological scores or subject area scores.

[3]Lewis M. Terman and Maud A. Merrill, Measuring Intelligence, (New York: Houghton Mifflin Company, 1937), p. 42.

distribution. Table I shows the test scores required to be placed in a specific psychological or achievement category and the per cent in each category of all the seniors studied in the state by year.

As was to be expected, many instances were found in the very superior and the very inferior categories in which the expected frequencies in the "twelve by five" tables were less than 7. A chi-square computed from such small frequencies tends to be too large and was not considered statistically reliable. For this reason the rows and the columns of the "twelve by five" tables were merged to form "five by three" tables. The merged tables produced greater consistency and in many cases revealed information lost in the finer groupings. Table II shows the test scores included in each psychological or subject area category and the per cent of seniors in each category by year.

Other methods of analysing the data were carefully considered such as using analysis of variance, regression equations together with partial and multiple correlation, and non-parametric statistics other than chi-square. After weighing the possibilities and anticipating the effort involved as well as the form of the final result, it seemed that more of the information for which the study was designed could be abstracted by the detailed use of chi-square than by using any other of the standard methods.

Limitations

Although there are many educational objectives other than the teaching of subject matter, there is little doubt that achievement in English, social studies, natural sciences, and mathematics is an

TABLE I

THE TEST SCORES INCLUDED IN EACH PSYCHOLOGICAL OR SUBJECT AREA CATEGORY AND THE PER CENT OF SENIORS IN EACH

Subject	Test Scores		Per cent	
	1951	1950	1951	1950
Very Superior				
Psychology*	59-Up	61-Up	6.9	6.7
English	57-Up	60-Up	5.1	7.5
Social Studies	53-Up	51-Up	6.7	6.6
Natural Sciences	47-Up	48-Up	7.0	6.5
Mathematics	44-Up	39-Up	6.8	6.8
Superior				
Psychological	47-58	48-60	24.7	24.6
English	47-56	54-59	24.5	23.3
Social Studies	37-52	34-50	24.4	25.2
Natural Sciences	29-46	30-47	23.8	22.6
Mathematics	27-43	24-38	23.9	22.5
Average				
Psychological	36-46	37-47	37.5	35.2
English	33-46	42-53	37.9	37.6
Social Studies	24-36	22-33	37.2	35.6
Natural Sciences	16-28	16-29	38.7	38.6
Mathematics	16-26	11-23	37.8	40.7
Inferior				
Psychological	26-35	26-36	23.3	25.5
English	17-32	26-41	24.8	23.8
Social Studies	13-23	12-21	24.2	23.8
Natural Sciences	8-15	7-15	23.2	24.1
Mathematics	7-14	4-10	23.9	22.0
Very Inferior				
Psychological	3-25	0-25	7.6	8.0
English	1-16	0-25	7.7	7.8
Social Studies	0-12	0-11	7.5	8.6
Natural Sciences	1-7	0-6	7.3	8.2
Mathematics	0-6	0-3	7.6	8.0

*The raw Psychological Examination scores were divided by two.

TABLE II

THE TEST SCORES INCLUDED IN EACH PSYCHOLOGICAL OR SUBJECT AREA CATEGORY AND THE PER CENT OF SENIORS IN EACH, MERCED TABLES

Subject	Test Scores		Per cent	
	1951	1950	1951	1950
Above Average				
Psychological[a]	47-Up	48-Up	31.6	31.3
English	47-Up	51-Up	29.6	30.8
Social Studies	37-Up	36-Up	31.1	31.8
Natural Science	29-Up	30-Up	30.8	29.1
Mathematics	27-Up	21-Up	30.7	29.3
Average				
Psychological	36-46	37-47	37.5	35.8
English	33-46	42-53	37.9	37.6
Social Studies	24-36	22-33	37.2	35.6
Natural Science	16-28	16-29	38.7	38.6
Mathematics	15-26	11-23	37.8	40.7
Below Average				
Psychological	3-35	0-36	30.9	33.5
English	1-32	0-41	32.5	31.6
Social Studies	0-23	0-21	31.7	32.6
Natural Science	1-15	0-15	30.5	32.3
Mathematics	0-14	0-10	31.5	30.0

[a]The raw Psychological Examination scores were divided by two.

integral part of the educational aims of public schools. McGuire[1] used achievement in these subjects as one criterion of the quality of the educational program. He described achievement in English, social studies, natural sciences, and mathematics as "the school patrons' rating" of the quality of the educational program. Throughout this study "achievement" or "academic achievement" will be used to mean achievement in subject matter as measured by the American Council Cooperative Tests in English, social studies, natural sciences, and mathematics.

The study is limited to the relationship of size of school and achievement in six-year, three-year, and twelve-year schools. The identification of factors associated with the size of school that may influence achievement is beyond the scope of the study.

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[1]Vincent McGuire, "An Analysis of the Relationships Between Six Controllable Factors and Three Measures of Quality in Forty-five Florida Secondary Schools," Doctor's thesis, University of Florida, 1951, p. 40.

CHAPTER II

THE ANALYSIS OF ACHIEVEMENT OF SENIORS IN ALL SIX-YEAR HIGH SCHOOLS

This chapter is devoted to the analysis of the intelligence and academic achievement of the seniors in all six-year schools.[1] Inasmuch as the average daily membership in grades 7-12 inclusive was used to determine the size of the high school division of twelve-year schools and the same criterion was used to determine the size of junior-senior high schools, these two administrative organizations were merged in this chapter and studied as all six-year high schools. This chapter presents: (1) a discussion of the meaning and use of the contingency table and the chi-square statistic, (2) the distribution of psychological scores of seniors in all six-year schools by size of school and three psychological categories, (3) the achievement of seniors by size of school without considering intelligence level, and (4) the achievement of seniors by size of school considering different intelligence levels.

Although 300 was the most frequent minimum enrolment recommended in the previous studies reviewed in Chapter I, it is interesting to note from Table III that 58.2 per cent of all the six-year schools included in the study had enrolments of less than 300 in 1951. These

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[1]Six-year schools included both school centers in which grades 1-12 and grades 7-12 inclusive were taught. In other chapters in which these two administrative organizations were treated separately the 1-12 school centers were designated twelve-year schools and the 7-12 centers as junior-senior high schools. The school centers that taught grades 10-12 were designated senior high schools.

small schools contained only 27.5 per cent of the total membership of six-year schools and only 26.6 per cent of the seniors tested in 1951. In 1950 the per cents were respectively 65.2, 33.1, and 30.5; and when the two years were merged the per cents were 61.8, 30.1, and 28.5 respectively. By way of contrast the large schools (1000-up) in 1951 included 5.7 per cent of the schools, 23.3 per cent of the membership, and 25.8 per cent of the seniors tested. The totals in Table XII show that the data considered in this chapter included 198 schools tested each year. The membership in all the six-year schools totaled 109,142 and of this total membership, 11,821 seniors were tested.

the Contingency Table

> Statisticians have developed three powerful techniques for the study of relationships between various factors. These are contingency tables, the analysis of variance and regression analysis. Contingency tables reveal association between classifications. The analysis of variance reveals, and to a certain extent measures, the relationship between a given (preferably a normally distributed) variable and one or more classifications. It also analyzes the total variance of the variable into its component parts. Regression analysis reveals and measures functional relationships between two or more variables.[1]

A contingency table is a double entry or two-way table in which a group possessing two characteristics of varying degrees is represented. As used in this study, each group represented in a contingency table possessed the variable characteristics of school size and one of the five American Council test scores. In Table IV, 5,821 pupils were classified by size of school and psychological score. School size was represented by five school size groups: 0-199, 200-299, 300-499, 500-999, and 1000-up; psychological scores as: below average, average, or above average. Reading down the first

[1]Acheson J. Duncan, Quality Control and Industrial Statistics, (Chicago: Richard D. Irwin, Inc., 1952), p. 422.

TABLE XIX

THE NUMBER OF SCHOOLS, NUMBER OF SENIORS TESTED, AND AVERAGE DAILY MEMBERSHIP OF SIX-YEAR SCHOOLS

School Size Group	No. Schools	No. Seniors Tested	Ave. Daily Membership	Per cent Schools	Per cent Seniors	Per cent Membership
			1951			
1000-up	9	1503	13409	5.7	25.8	23.3
500-999	25	1619	16202	15.8	27.8	28.2
300-499	32	1150	12100	20.3	19.8	21.0
200-299	35	628	8418	22.1	10.8	14.6
0-199	57	721	7420	36.1	12.4	12.9
Total	158	5821	57549	100.0	100.0	100.0
			1950			
1000-up	9	1641	12146	5.7	27.4	24.1
500-999	16	1110	10411	10.1	19.0	20.8
300-499	30	1386	11654	19.0	23.1	22.6
200-299	29	747	7220	18.4	12.5	14.0
0-199	74	1076	9862	46.8	18.0	19.1
Total	158	5990	51593	100.0	100.0	100.0
			1951 and 1950 Merged			
1000-up	16	3144	25855	5.6	26.6	23.7
500-999	41	2759	26613	13.0	23.4	24.4
300-499	62	2536	23754	19.6	21.5	21.8
200-299	64	1575	15638	20.3	13.3	14.3
0-199	131	1797	17282	41.5	15.2	15.8
Total	316	11811	109142	100.0	100.0	100.0

column (opposite "O," observed frequency) of the 2,215 pupils with below average psychological scores, 367 were in school size group 1000-up, 605 in school size group 500-999, etc. Across the first row of the 1,503 seniors in school size group 1000-up, 367 were below average in psychological score, 590 average, and 546 above average. The other columns and rows are interpreted in the same way.

the null hypothesis to be tested is that psychological scores are independent or unrelated to school size. In order to test this null hypothesis the chi-square statistic was used. Before a chi-square could be computed, an expected frequency "E" or an "independence value" had to be computed for each cell in the table. Expected frequencies are in the rows opposite "E's." They represent the number of seniors expected in a school size group possessing the designated psychological category in the absence of any real association between size of school and psychological scores. The method of calculating expected frequencies follows: Illustrating with the first entry, Table IV, there were 2,215 seniors with psychological scores below average and 1,503 seniors in school size group 1000-up. If there were no association between seniors with below average psychological scores and seniors in the 1000-up school size group, then by chance, $\frac{2,215 \times 1,503}{5,921}$ or 571.0 of the seniors would be below average in intelligence and also in the 1000-up school size group. The reason for this may readily be seen.

TABLE IV

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951

School Size	b	Psychological Categories: Below Average	Average	Above Average	Total
1000-up	E	571.90	553.80	377.20	1502.90
	O	367.00	590.00	546.00	1503.00
	X	73.41	2.37	75.54	151.32
500-999	E	616.10	596.60	406.30	1619.00
	O	605.00	595.00	419.00	1619.00
	X	.20		.40	.60
300-499	E	437.80	423.80	288.60	1150.00
	O	511.00	394.00	245.00	1150.00
	X	12.31	2.10	6.59	21.00
200-299	E	315.10	305.10	207.80	828.00
	O	358.00	321.00	149.00	828.00
	X	5.84	.83	16.64	23.31
0-199	E	274.40	275.70	181.00	721.10
	O	374.00	245.00	102.00	721.00
	X	36.15	1.61	34.48	72.24
Total	E	2215.10	2145.00	1460.90	5821.00
	O	2215.00	2145.00	1461.00	5821.00
	X	127.91	6.91	133.65	268.47

[a] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

If $\frac{2,215}{5,821}$ of the entire group is below average in intelligence and if there is no dependence of psychological score on school size, then this proportion of the below average intelligence group should hold for any sub-group. Hence, $\frac{2,215}{5,821}$, or 38 per cent (771.9) of the 1,503 seniors in school size group 1000-up should be below average in intelligence. All the expected frequencies in the contingency tables were computed by this method.

Once the expected values were computed, the contribution of each cell to chi-square ($^{c}\chi^{2}$) was calculated by finding the difference between the observed and expected values for each cell, squaring this difference and dividing in each instance by the expected value. The sum of these quotients gives chi-square. In the present problem the contribution of the first cell to chi-square was 73.41, $\frac{(771.9 - 267.0)^2}{367}$ or 73.41.

The probability level of confidence and the number of degrees of freedom are two factors that function to determine the significance of the obtained chi-square. The .05 level of confidence was used in this study, i.e., a chi-square was considered significant when the chi-square was so large that it would be expected to occur by chance only once in twenty trials. The degrees of freedom (d.f.) in a contingency table were determined from the number of rows (r) and the number of columns (c) in the table using the relation d.f. = (r-1)(c-1). This calculation

gave 8 degrees of freedom for the five by three contingency tables. It will be noted from the table of chi-squares, Table V, that a chi-square of 15.51 was considered significant for 8 degrees of freedom. The sum of the cell chi-squares in the example above was 248.47. This was much greater than 15.51 and for this reason the null hypothesis of independence of school size and psychological scores was rejected. In other words there was an association between size of school and the psychological scores of the seniors involved in the contingency table.

A null hypothesis may is thought of as a "challenge" and the function of the experiment is is give the facts a chance to meet (or fail to meet) the challenge. If the statistical analysis indicates acceptance of a properly stated null hypothesis, usually no further experimentation is necessary. If, however, the null hypothesis is rejected, considerable experimenting is necessary before the questions suggested by the rejection of the null hypothesis may is answered. the rejection of the null hypothesis in the example above and the conclusion of relationships between school size and psychological scores suggested such questions as: (1) What are the relationships between psychological scores and school size? (2) Which school size groups tend to have higher psychological scores than expected? This chapter will attempt is answer these and other questions.

the achievement of the seniors in a school size group was determined from the deviations of the observed frequencies from the

TABLE V

TABLE OF CHI-SQUARE[a]

(THE VALUES OF CHI-SQUARE ARE LISTED IN THE BODY OF THE TABLE)

Degrees of Freedom	Probability .05
1	3.84
2	5.99
3	7.82
4	9.49
5	11.07
6	12.59
7	14.07
8	15.51
9	16.92
10	18.31

[a]Adapted from Wilfrid J. Dixon and Frank J. Massey, Jr., Introduction to Statistical Analysis, p. 308, McGraw-Hill Book Company, Inc. New York, 1951, 370 pages.

expected frequencies. Deviations in the above average column not the below average column of a school size group were considered in judging achievement better than expected, about as expected, or not as well as expected, i.e., achievement as expected if there were no association between size of school not the achievement of all the seniors included in the contingency table. The seniors in a school size group were considered as not deviating too much from the expected if the deviations were not significant as measured by the value of chi-square at the chosen level of confidence. Both the direction of the deviation not the magnitude of deviation were considered in judging achievement better than expected, as expected, or not as well as expected.

the direction of the deviation was determined by inspection as follows:

1. An observed frequency greater than the expected frequency (OF>EF) in the above average column indicated a tendency for the seniors in the school size group to achieve better than expected.
2. An observed frequency less than the expected frequency (OF<EF) in the below average column indicated a tendency for the seniors in the school size group to achieve better than expected.
3. An observed frequency less than the expected frequency (OF<EF) in the above average column indicated a tendency for the seniors in the school size group to achieve not as well as expected.

4. An observed frequency greater than the expected frequency (OF>EF) in the below average column indicated a tendency for the seniors in the school size group to achieve not as well as expected.

The contribution of each cell to chi-square was used as the measure of the magnitude of the deviation of the observed from the expected frequency. The sum of the chi-squares in the above average and the below average columns was compared with 5.99 in judging the significance of the deviation. If the sum of the chi-squares was greater than 5.99, achievement was judged to be better than expected ("+") or and or well as expected ("-") depending on the direction of the deviation determined from inspection. If the sum of the chi-square was less than 5.99 achievement was judged to be neither significantly better nor worse than expected ("0"). Table VI presents in symbols this method of judging the achievement of seniors in school size groups.

The sum of the frequencies in the above average and below average columns was and fixed and for this reason 2 degrees of freedom were used in determining the significance of the combined chi-squares. Using 2 degrees of freedom instead of 1 increased the number of cases about 5 per cent in which achievement was judged neither significantly better nor worse than expected.

The frequency distributions of the American Council on Education Tests scores prepared by the Board of University Examiners for 1951 and 1950 were used to select test scores in each subject

TABLE VI

THE METHOD OF EVALUATING THE CHI-SQUARE SIGNIFICANCE TESTS OF INTER-DEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT[a]

Below Average	Above Average	Cell Chi-Squares	Decision
OF<EF	OF>EF	$X_1 + X_3 > 5.99$	+
		$X_1 + X_3 < 5.99$	0
OF>EF	OF<EF	$X_1 + X_3 > 5.99$	-
		$X_1 + X_3 < 5.99$	0

[a]Explanation of symbols:

"OF" observed frequency
"EF" expected frequency
" > " greater than
" < " less than
"+" achievement was considered better than expected
"-" achievement was considered not as well as expected
"0" achievement was considered neither significantly better nor worse than expected
"X_1" contribution of the cell in the below average column to chi-square
"X_3" contribution of the cell in the above average column to chi-square

so that approximately 33 per cent of all seniors tested each year would be classified above average, 36 per cent average, and 31 per cent below average. the scores selected and the per cent of the seniors studied in each of these categories were shown in Table XI.[1] This procedure classified the seniors as above average, average, or below average in English, social studies, natural sciences, and mathematics independently of size of school or administrative organization. This means, for example, that throughout the study an observed frequency in the column of a contingency table headed above average achievement in English represented an English test means of 47-up in 1951 or 54-up in 1950.

the school size intervals are large and although the terminal points of the interval are used in the discussion, it is not intended that the terminal points be interpreted as the exact dividing points, i.e., there are probably many means in which the achievement of seniors in schools with 900 enrolment would not differ significantly from the achievement of seniors in schools of 1100 enrolment, yet frequent reference is made in the study to the difference in the achievement of seniors in school size group 1000-up as compared with the achievement of seniors in school size group 500-999. This is to say that the relationship between school size and achievement should be considered as a continuous function rather than a discrete function.

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[1]Table XI, page 20.

Psychological Scores

The psychological scores of the seniors tested in 1951 were distributed by school size and three psychological groupings. The same distribution was made for the seniors tested in 1950. The observed frequencies of these two distributions were merged to form a third distribution of the psychological scores by school size. Different forms of the American Council Psychological Examination were used each year. If different groups tested by different forms of the psychological examination at different times reveals uniform results with respect to school size, then it is reasonable to assume factors that influence psychological scores function in relation to school size in the same way psychological scores function.

The psychological scores of the seniors in six-year schools indicated consistent results for the three cases studied as shown in Table VII. The deviations of the observed frequencies from the expected frequencies were favorable for school size group 1000-up. This means that the proportion of seniors with high psychological scores in schools larger than 1000 was greater than the proportion of seniors with high psychological scores in all the six-year schools taken together.

It is interesting to note the deviation of the observed from the expected frequencies of the 200-999 school size group was not significant, i.e., the seniors in this school size group had their psychological scores distributed in about the same

TABLE VII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND PSYCHOLOGICAL SCORES FOR ALL SECTIONS IN SIX-YEAR SCHOOLS[a]

School Size Group	Psychological		
	1951[b]	1950	Both Years Merged
	1[c]	8	9
1000-up	+	+	+
500-999	0	0	0
300-499	-	-	-
200-299	-	-	-
0-199	-	-	-
Total	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant.

[b]The year test was administered.

[c]Appendix table number.

proportion as the scores of all the seniors in six-year schools taken together.

Six-year schools smaller than 300 seemed to have seniors with a larger proportion of low psychological scores than expected when compared with all the seniors in the contingency table.

Achievement by Size of School Without Considering Intelligence Level

Achievement in English, social studies, natural sciences, and mathematics as measured by the American Council Cooperative Tests was related to the size of school as may be noted from Table XXXV. Achievement of seniors in school size group 1000-up was significantly better than expected[1] in all four subject areas. The seniors in schools smaller than 300 did not seem to achieve as well as expected.

English.--School size group 1000-up had a favorable[2] deviation of observed from expected frequencies for 1951, 1950, and for both years merged. The seniors in this group achieved better than those of any other school size group. In 1951 the seniors in school size group 700-999 achieved better than expected but the deviation was indecisive for the other two cases. The

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[1]Achievement better than expected means that the deviation of the observed from expected frequencies indicated a larger proportion of the seniors in that school size group were in the above average column than expected if there were no association between size of school and achievement in English.

[2]The deviations of the observed from the expected frequencies indicated achievement better than expected.

TABLE VIII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR ALL SENIORS IN SIX-YEAR SCHOOLS[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951	1950	M	1951	1950	M	1951	1950	M	1951	1950	M
	4[b]	5	6	7	8	9	10	11	12	13	14	15
1000-up	+	+	+	+	+	+	+	+	+	+	+	+
500-999	+	0	S	0	S	0	+	0	+	0	0	0
300-499	-	-	-	-	-	-	-	S	-	S	-	-
200-299	-	-	-	-	-	-	-	-	-	-	-	-
0-199	-	-	-	-	-	-	-	-	-	-	-	-
Total	S	S	S	S	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "S," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[a]Appendix table number.

achievement of the seniors in six-year schools smaller than 300 was significantly unfavorable[1] which means achievement in English of schools smaller than 300 was not so favorable in proportion to the achievement in English of all the six-year schools.

Social Studies.--The achievement in social studies of the seniors in school size group 1000-up was better than expected. This means a larger proportion of the seniors in school size group 1000-up had high scores in social studies than the proportion of high scores than all the seniors in six-year schools were taken together. The deviation of the observed from the expected frequencies in school size group 500-999 was not significant. The seniors in schools smaller than 500 consistently indicated achievement poorer than expected in social studies.

Natural Sciences.--The deviations of observed frequencies from expected frequencies in the natural sciences apparently was favorable for schools 500 and larger and unfavorable for schools smaller than 500. The achievement of the seniors in school size group 500-999 was better in the natural sciences than in any other subject.

Mathematics.--The achievement in mathematics of the 1000-up group was better than expected. The achievement of the seniors in the 300-499 school size group was about as expected in 1951, but this appeared to be a chance variation as there was unfavorable deviation in 1950 and in the merged group.

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[1]The deviations of the observed from the expected frequencies indicated achievement not as well as expected.

Achievement by Size of School of
Three Intelligence Categories

It was revealed in the analysis of psychological scores that large schools had a larger proportion of seniors with high psychological test scores than small schools. Seniors from large schools also exhibited a tendency to achieve better than expected in English, social studies, natural sciences, and mathematics when intelligence was not considered. When intelligence was considered, i.e., when seniors with similar intelligence levels were analyzed as a group, did the seniors in large schools achieve better than expected? In order to answer this question the achievement in English, social studies, natural sciences, and mathematics of the above average, average, and below average psychological categories was analyzed separately for each category.

Above average psychological category.—It will be noted from Table IX that the seniors in school size group 1000-up achieved better than expected in natural sciences. This school size group achieved in mathematics as expected in 1950 and 1951, but better than expected when both years were merged. The achievement of the seniors in school size groups 300-499 and 200-299 was as expected in all four subject areas with one exception in the 200-299 school size group. This exception was achievement not as well as expected in social studies when both years were merged. Seniors from school size group 0-199 achieved about as expected in natural sciences and mathematics.

TABLE IX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE ABOVE AVERAGE PSYCHOLOGICAL CATEGORY IN SIX-YEAR SCHOOLS[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	M	1951	1950	M	1951	1950	S	1951	1950	S
	16[c]	17	18	19	20	21	22	23	24	25	26	27
1000-up	+	+	+	+	+	+	0	0	0	0	0	+
500-999	0	0	0	0	-	0	0	0	0	0	0	S
300-499	0	S	0	0	0	0	0	0	0	0	0	0
200-299	0	S	0	S	S	-	0	0	0	0	0	0
0-199	0	-	-	0	-	-	0	0	0	0	0	0
Total	S	S	S	S	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "S," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

When both years were merged and in 1950 the seniors in schools smaller than 200 evidenced an inclination toward achievement and as well as expected in English and social studies.

Average psychological category.--From Table X it may be observed that the achievement of the 1000-up school size group was better than expected in English and social studies, but as expected in natural sciences and mathematics. In the 500-999 school size group achievement in English in 1951 and achievement in natural sciences when both years were merged was better than expected. In all other cases this school size group achieved as expected. The achievement of the seniors in school size groups 300-499 and 200-299 was essentially the same since both groups indicated some achievement not as well as expected in English and achievement as expected in the other three subjects. Seniors in school size group 0-199 showed consistent achievement as expected in all four subject areas in 1950. When both years were merged and in 1951 the seniors in this school size group indicated achievement and as well as expected.

Below average psychological category.--A study of Table XI discloses the achievement of the seniors in the 1000-up school size group was better than expected in English and social studies, but about as expected in natural sciences and mathematics. Seniors in school size group 500-999 achieved better than expected in natural sciences but as expected in all other subject areas. The seniors in school size group 0-199 achieved about as expected in mathematics. The achievement in English, social studies, and natural sciences of the seniors in this group was generally poorer than expected.

TABLE X

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE AVERAGE PSYCHOLOGICAL CATEGORY IN SIX-YEAR SCHOOLS[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	M	1951	1950	M	1951	1950	M	1951	1950	M
	28[c]	29	30	31	32	33	34	35	36	37	38	39
1000-up	+	+	+	+	+	+	0	0	0	0	0	0
500-999	+	0	0	0	0	0	0	0	+	0	0	0
300-499	0	0	-	0	0	0	0	0	0	0	0	0
200-299	0	-	-	0	0	0	0	0	0	0	0	0
0-199	-	0	-	-	0	-	-	0	-	-	0	-
Total	S	S	S	S	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

TABLE XI

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE BELOW AVERAGE PSYCHOLOGICAL CATEGORY IN SIX-YEAR SCHOOLS[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	M	1951	1950	M	1951	1950	M	1951	1950	M
	40[c]	41	42	43	44	45	46	47	48	49	50	51
1000-up	+	+	+	+	+	+	0	0	S	0	0	0
500-999	0	0	0	S	0	0	+	S	+	0	0	0
300-499	0	0	0	0	0	0	0	0	S	0	0	0
200-299	S	S	0	S	0	0	0	0	-	0	0	0
0-199	-	0	-	S	-	-	-	0	-	0	S	0
Total	S	S	S	0	0	S	0	S	S	N	N	N

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "S," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

Summary and Conclusions

This chapter was devoted to the analysis of the American Council Psychological Examination scores and the American Council Cooperative test scores in English, social studies, natural sciences, and mathematics made by 11,811 high school seniors in all the six-year schools of Florida. The seniors studies were tested in 1950 and 1951 with 158 schools represented each year. The chi-square statistic and 52 contingency tables were used to examine: (1) the distribution of psychological scores in six-year schools by size of school and three psychological categories, (2) achievement by size of school without considering intelligence level, and (3) achievement by size of school for each of three arbitrarily selected intelligence levels.

The analysis indicated:

1. There seemed to be a relationship between the size of school and the distribution of psychological scores in six-year schools. The proportion of seniors with high psychological scores in schools larger than 1000 was greater than the proportion of seniors with high scores in all the six-year schools taken together. Schools smaller than 500 evidenced a higher proportion of low psychological scores.

2. When intelligence was not considered, a relationship between size of school and test scores in English, social studies, natural sciences, and mathematics was indicated. The achievement of seniors in schools larger than 1000 was significantly better than expected in all four subject areas. The seniors in schools smaller

than 500 generally exhibited achievement inferior to that which was expected.

3. There was evidence of a relationship between the achievement of the above average psychological category and school size in English and social studies. Seniors in schools larger than 1000 achieved better than expected in these two subjects. The seniors in schools smaller than 200 did not achieve as well as expected in English or social studies in 1950. The deviations of observed from expected frequencies were not significant in the natural sciences.

4. The achievement of seniors in the average psychological category as measured by the total contributions to chi-square in each of the contingency tables indicated a relationship with the size of school except in social studies and mathematics in 1950. Seniors attending schools larger than 1000 achieved better than expected in English and social studies but about as expected in natural sciences and mathematics. The seniors in school size group 0-199 did not achieve as well as expected in any of the subjects being investigated in 1951.

5. There was a relationship between size of school and the achievement of the seniors in the below average psychological category in English, social studies, and natural sciences. It is interesting to note that achievement in mathematics of the below average psychological category was independent of the size of school. Seniors in schools

larger than 1000 consistently indicated achievement in English and social studies better than expected. The seniors in school size group 500-999 achieved better than expected in natural sciences.

CHAPTER III

THE ANALYSIS OF ACHIEVEMENT OF SENIORS IN SENIOR HIGH SCHOOLS

PART I

This chapter is an analysis of the psychological scores and the achievement of the seniors in school centers comprised of grades 10-12 inclusive. In order to compare the achievement of the seniors in senior high schools with the achievement of seniors in all six-year schools, the same school size groups were used. Approximately 90 per cent of the senior high schools were larger than 500 in average daily membership and for this reason Part II of this chapter is devoted to the analysis of the achievement of seniors in senior high schools grouped by school size more appropriate for senior high schools.

This chapter investigates: (1) the distribution of psychological scores of seniors in senior high schools by size of schools and three psychological categories, (2) achievement of seniors by size of schools without considering intelligence level, and (3) achievement of seniors by size of school considering different intelligence levels.

There were twenty senior high schools included in the study in 1951 and eighteen in 1950, as may be noted from Table XII.

TABLE XII

THE NUMBER OF SCHOOLS, NUMBER OF SENIORS TESTED, AND AVERAGE DAILY MEMBERSHIP OF SENIOR HIGH SCHOOLS - PART I

School Size Group	No. Schools	No. Seniors Tested	Ave. Daily Membership	Per cent Schools	Per cent Seniors Tested	Per cent Average Daily Membership
1951						
1000-up	10	3,820	19,896	50.0	72.5	75.2
500-999	8	1,292	5,890	40.0	24.5	22.3
300-499	1	92	398	5.0	1.8	1.5
200-299	1	62	263	5.0	1.2	1.0
0-199	0	0	0	0.0	0.0	0.0
Total	20	5,266	26,447	100.0	100.0	100.0
1950						
1000-up	10	3,811	17,109	55.6	76.5	79.1
500-999	5	875	3,358	27.8	17.6	15.5
300-499	2	228	897	11.1	4.6	4.1
200-299	1	66	283	5.5	1.3	1.3
0-199	0	0	0	0.0	0.0	0.0
Total	18	4,980	21,647	100.0	100.0	100.0
1951 and 1950 Merged						
1000-up	20	7,631	37,005	52.6	74.5	77.0
500-999	13	2,167	9,248	34.2	21.1	19.2
300-499	3	320	1,295	7.9	3.1	2.7
200-299	2	128	546	5.3	1.3	1.1
0-199	0	0	0	0.0	0.0	0.0
Total	38	10,246	48,094	100.0	100.0	100.0

School size group 1000-up included approximately 50 per cent of the senior high schools, 75 per cent of the membership, and 75 per cent of the seniors tested. Less than 6 per cent of the seniors tested were in senior high schools smaller than 500. On the other hand, approximately 50 per cent of the seniors in all six-year schools were in schools smaller than 500.

Distribution of Psychological Scores

The psychological scores of the seniors tested in 1951 were distributed by school size and three psychological groupings. The same distribution was made for the seniors tested in 1950. The observed frequencies of these two distributions were merged to form a third distribution of the psychological scores by school size.

It may be noted from Table XIII that school size groups 500-999 and 1000-up were the only two school size groups in which the observed frequencies were large enough to make valid comparisons with the corresponding school size group of all six-year schools. School size group 1000-up had a larger proportion of seniors with high psychological scores than expected when compared with the psychological scores of all the seniors in the senior high schools. The 500-999 school size group had a larger proportion of low psychological scores than expected. It was noted in Chapter II that the psychological scores in the 500-999 school

TABLE XXII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND PSYCHOLOGICAL SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS - PART I[a]

School Size Group	Psychological		
	1951[b]	1950	Both Years Merged
	52[c]	51	5h
1000-up	+	0	+
500-999	-	0	-
300-499	0	0	0
200-299	0	0	0
0-199			
Total	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant.

[b]The year test was administered.

[c]Appendix table number.

size group were distributed about as expected in all six-year schools.

Achievement by Size of School without Considering Intelligence Level

When intelligence was not considered the deviation of the observed from expected frequencies was favorable in the 1000-up school size group in English and social studies. There were no favorable deviations in natural sciences or mathematics.

English.--The analysis of the data in Table XIV indicated a relationship between the size of school and achievement in English. The seniors in school size group 1000-up achieved better than expected and the seniors in school size groups 500-999 and 300-499 did not achieve as well as expected.

Social studies.--The achievement in social studies of the seniors in the 1000-up school size group was judged better than expected as all significant deviations were favorable. When both years were merged, the achievement of the seniors in school size group 500-999 was poorer than expected. The seniors in the 300-499 school size group achieved about as expected in 1951 but poorer than expected in 1950.

Natural sciences.--Although the sum of the chi-squares in one contingency table indicated an association between the size of school and achievement of seniors in natural sciences, the difference in the achievement of school size groups was not considered significant.

TABLE XIV

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR ALL SENIORS IN SENIOR HIGH SCHOOLS - PART I[a]

School Size Group	English			Social Studies			Natural Science			Mathematics		
	1951[b]	1950	M	1951	1950	M	1951	1950	M	1951	1950	M
	55[c]	56	57	58	59	60	61	62	63	64	65	66
1000-up	+	+	+	+	0	+	0	0	0	S	0	0
500-999	-	-	-	-	0	-	-	S	0	S	0	-
300-499	0	-	-	S	-	-	0	-	0	S	-	-
200-299	0	0	0	S	S	S	0	S	S	S	S	0
0-199												
Total	S	S	S	S	S	S	S	N	N	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number

Mathematics.—There were no favorable deviations of observed from expected frequencies in mathematics. The seniors in school size group 500-999 exhibited achievement inferior to that expected when both years were merged. The achievement in mathematics of the seniors in school size group 300-499 was significantly poorer than expected in the merged group (1951 and 1950 combined) and also in the 1950 group.

Achievement by Size of School of
Three Intelligence Categories

The patterns of achievement described above were not well defined when all the seniors in senior high schools were studied together. Even fewer decisive results were obtained when the seniors were divided into three psychological categories.

Above average psychological category.—As will be noted from Table XV the achievement in English and mathematics of seniors in the above average psychological category was independent of the size of school. The achievement in social studies of the seniors in school size group 500-999 was less than expected in 1951. When both years were merged the seniors in school size group 500-999 achieved better than expected in natural sciences. The seniors in school size group 300-499 did not achieve as well as expected in natural sciences in 1951 or when both years were merged.

Average psychological category.—The achievement of the seniors in the average psychological category was as expected in

TABLE XV

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE ABOVE AVERAGE PSYCHOLOGICAL CATEGORY IN SENIOR HIGH SCHOOLS - PART I[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	M	1951	1950	M	1951	1950	M	1951	1950	M
	67[c]	68	69	70	71	72	73	74	75	76	77	78
1000-up	0	0	0	0	0	0	0	0	0	S	0	0
500-999	0	0	S	-	S	0	0	0	+	0	0	0
300-499	S	0	S	0	0	0	0	0	0	S	0	S
200-299	S	0	0	0	0	0	-	0	-	0	0	0
0-199												
Total	S	S	0	0	S	S	S	M	S	M	S	0

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "S," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

TABLE XVI

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE AVERAGE PSYCHOLOGICAL CATEGORY IN SENIOR HIGH SCHOOLS - PART I[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	Σ	1951	1950	Σ	1951	1950	Σ	1951	1950	Σ
	79[c]	80	81	82	83	84	85	86	87	88	89	90
1000-up	Σ	+	+	0	0	0	0	0	0	0	0	0
500-999	Σ	-	-	0	Σ	0	0	0	0	+	0	0
300-499	0	-	-	0	-	-	0	-	-	0	0	0
200-299	0	0	0	0	-	-	0	-	-	0	-	0
0-199												
Total	Σ	Σ	Σ	Σ	Σ	0	Σ	0	Σ	Σ	Σ	Σ

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "Σ," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "N," both years merged.

[c]Appendix table number.

TABLE XVII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE BELOW AVERAGE PSYCHOLOGICAL CATEGORY IN SENIOR HIGH SCHOOLS - PART I[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	S	1951	1950	M	1951	1950	M	1951	1950	S
	91[c]	92	93	94	95	96	97	98	99	100	101	102
1000-up	0	0	0	0	0	0	0	0	0	0	0	0
500-999	0	0	0	0	0	0	0	0	0	0	0	0
300-499	0	0	0	0	0	0	0	0	0	0	0	0
200-299	0	0	0	0	0	0	0	0	0	0	0	0
0-199												
Total	M	S	S	S	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "M," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

English, social studies, and natural sciences in 1951. The seniors in school size group 500-999 achieved better than expected in mathematics in 1951. The seniors in 1000-up school size group achieved better than expected in English in 1950. The seniors in school size groups 500-999 and 300-499 did not achieve as well as expected in 1950. The achievement of seniors in school size groups 200-299 and 300-499 was inferior in that expected in social studies and natural sciences in 1950.

below average psychological category.--The achievement of the seniors in the below average psychological category in the senior high schools was independent of the size of school. In other words, the achievement of seniors in senior high schools with below average psychological scores was not significantly different in the five school size groups.

PART II

It was desired in compare the achievement of seniors in senior high schools with the achievement of seniors in the same school size group of all six-year schools and for this reason senior high schools were grouped as in Part I of this chapter. This method of grouping senior high schools, however, was not considered appropriate as approximately 75 per cent of the seniors were in the 1000-up school size group. Part II of this chapter analyses the achievement of the seniors in senior high schools grouped by size as follows: 0-499, 500-749, 750-1499, 1500-1999,

TABLE XVIII

THE NUMBER OF SCHOOLS, NUMBER OF SENIORS TESTED, AND AVERAGE DAILY MEMBERSHIP OF SENIOR HIGH SCHOOLS - PART II

School Size Group	No. Schools	No. Seniors Tested	Ave. Daily Membership	Per cent		
				Schools	Seniors	Membership
1951						
2000-up	5	2,364	11,378	25.0	44.9	43.0
1500-1999	4	1,286	7,249	20.0	24.4	27.4
750-1499	5	923	4,821	25.0	17.5	18.2
500-749	4	539	2,338	20.0	10.2	8.9
0-499	2	154	661	10.0	3.2	2.5
Total	20	5,266	26,447	100.0	100.0	100.0
1950						
2000-up	3	1,692	6,560	16.7	34.0	30.3
1500-1999	4	1,366	6,700	22.2	27.4	31.0
750-1499	5	1,105	5,445	27.8	22.2	25.2
500-749	3	523	1,762	16.7	10.5	8.1
0-499	3	294	1,180	16.6	5.9	5.4
Total	18	4,980	21,647	100.0	100.2	100.0
1951 and 1950 Merged						
2000-up	8	4,056	17,938	21.1	39.6	37.3
1500-1999	8	2,652	13,949	21.1	25.9	29.0
750-1499	10	2,028	10,266	26.3	19.8	21.4
500-749	7	1,062	4,100	18.4	10.3	8.5
0-499	5	448	1,841	13.1	4.4	3.8
Total	38	10,246	48,094	100.0	100.0	100.0

and 2000-up. This method of grouping senior high schools seemed to be more appropriate as the per cent of schools and the per cent of seniors in the various groups were more evenly distributed.

Distribution of Psychological Scores

The psychological scores of the seniors tested in 1951 were distributed by school size and three psychological groupings. The same distribution was made for the seniors tested in 1950. The observed frequencies of these two distributions were merged to form a third distribution of the psychological scores by school size.

From Table XIX it may be observed that when both years were merged and in 1951 school size group 2000-up had a larger proportion of seniors with high psychological scores than expected when compared with the psychological scores of all the seniors in the senior high schools. School size group 1500-1999 had psychological scores distributed about as expected when both years were merged and in 1950 but lower than expected in 1951. The only school size group to show consistently lower psychological scores than expected was school size group 500-749.

It will be recalled from Table XIII[1] that the seniors in school size group 1500-up had a favorable distribution of psychological scores. When the 1000-up group was further divided into three groups as in this chapter it was found that schools had to

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[1]Table XIII, p.

TABLE XIX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND PSYCHOLOGICAL SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS - PART II[a]

School Size Group	Psychological		
	1951[b]	1950	Both Years Merged
	103[c]	104	105
2000-up	+	0	+
1500-1999	-	S	S
750-1499	-	0	-
500-749	-	-	-
0-499	0	0	0
Total	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant.

[b]The year test was administered.

[c]Appendix table number.

be larger than 2000 before a favorable deviation of observed frequencies from expected frequencies was obtained.

Achievement by Size of School without Considering Intelligence Level

The achievement of the seniors in senior high schools in English, social studies, natural sciences, and mathematics when intelligence was not considered indicated that school size group 500-749 generally did not achieve as well as expected when compared with the achievement of all the seniors tested in the senior high schools.

English.--When both years were merged and in 1951 the seniors in the 2000-up school size group achieved better than expected as may be noted from Table XI. School size groups 1500-1999 and 750-1499 evidenced achievement as expected. The achievement of the seniors in school size group 500-749 was consistently poorer than expected in all three cases.

Social studies.--The seniors in school size group 2000-up achieved in social studies better than expected in all three cases. The achievement of the seniors in school size group 750-1499 revealed a slight tendency to achieve poorer than expected. The seniors in schools smaller than 750 did not achieve as well as expected in social studies.

Natural sciences.--When the two years were merged the seniors in schools larger than 2000 achieved better than expected

TABLE IX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR ALL SENIORS IN SENIOR HIGH SCHOOLS - PART I[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	M	1951	1950	M	1951	1950	M	1951	1950	M
	106[c]	107	108	109	110	111	112	113	114	115	116	117
2000-up	+	0	+	+	+	+	+	0	+	0	0	0
1500-1999	0	0	0	0	0	0	S	S	-	0	0	S
750-1499	0	0	0	-	0	0	0	+	0	0	+	+
500-749	-	-	-	-	-	-	-	-	-	0	-	-
0-499	0	-	-	-	-	-	0	-	-	S	-	-
Total	S	0	S	S	S	S	S	S	S	0	S	0

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "M," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "M," the sum of the chi-square in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

in natural sciences. It is interesting to note that the seniors in school size group 750-1499 achieved better than expected in 1950. In cases in which the deviations of observed from expected frequencies were significant, the indications were that the seniors in schools smaller than 750 did not achieve as well as expected.

Mathematics.--The achievement in mathematics of the seniors in school size group 3000-up was as expected. Mathematics was the only subject in which this school size group failed to have at least two indications of favorable achievement. When the two years were merged and in 1950 the seniors in school size group 750-1499 achieved better than expected. The seniors in schools smaller than 750 did not achieve as well as expected in 1950 or when both years were merged.

Achievement by Size of School of Three Intelligence Categories

The seniors in the above average and average psychological categories presented an achievement pattern similar to the pattern of all the seniors in senior high schools when intelligence was not considered. The achievement of the seniors in the below average psychological category, however, seemed to indicate little relationship between size of school and achievement in English, social studies, natural sciences, or mathematics.

Above average psychological category.--When both years were merged the seniors in school size group 2000-up achieved better than expected in social studies and natural sciences. The achievement of this group in natural sciences was also better than expected in 1951. The seniors in school size group 1500-1999 achieved about as expected in social studies, natural sciences, and mathematics. There was one case in which the seniors in this school size group achieved better than expected in English and this was when both years were merged. The achievement of the seniors in schools smaller than 1500 seemed to be about as expected in all four subject areas; nevertheless, when the deviation of observed from the expected frequencies was significant, achievement not as well as expected was indicated.

Average psychological category.--The seniors in the 2000-up school size group achieved about as expected in English and natural sciences. When both years were merged and in 1950 the achievement in social studies of the seniors in school size group 2000-up was better than expected; paradoxically, this group did not achieve as well as expected in mathematics in 1950. The seniors in school size group 1500-1999 evidenced achievement as expected in English and natural sciences. The most consistent school size group in the average psychological category was school size group 750-1499. The seniors in this group achieved better than expected in English, natural sciences, and mathematics when

TABLE XXX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE ABOVE AVERAGE PSYCHOLOGICAL CATEGORY IO SENIOR HIGH SCHOOLS - PART II[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	N	1951	1950	N	1951	1950	N	1951	1950	N
	118[c]	119	120	121	122	123	124	125	126	127	128	129
2000-up	0	0	0	0	0	+	+	0	+	0	0	0
1500-1999	0	0	+	0	0	0	0	0	0	0	0	0
750-1499	0	0	0	0	0	0	-	0	-	0	0	0
500-749	0	0	-	-	0	0	0	0	0	0	0	0
0-499	0	0	0	-	0	0	-	0	0	0	0	0
Total N	0	0	0	0	0	0	0	0	0	0	0	N

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "N," both years merged.

[c]Appendix table number.

TABLE XXXX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE AVERAGE PSYCHOLOGICAL CATEGORY IN SENIOR HIGH SCHOOLS - PART II[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	B	1951	1950	N	1951	1950	B	1951	1950	B
	130[c]	131	132	133	134	135	136	137	138	139	140	141
2000-up	0	0	0	0	+	+	0	0	0	0	-	0
1500-1999	0	0	0	0	-	0	0	0	S	-	S	0
750-1499	0	+	+	0	0	0	0	+	+	0	+	+
500-749	-	-	-	0	0	0	0	0	0	0	S	0
0-499	0	-	-	S	-	-	0	-	-	0	-	S
Total	S	S	S	S	S	S	N	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "B," both years merged.

[c]Appendix table number.

both years were merged and in 1950. The achievement in English of the seniors in school size group 500-749 was poorer than expected. This group, however, seemed to achieve about as expected in the other three subject areas. There was some indication in all four subject areas that the seniors in schools smaller than 500 did not achieve as well as expected.

Below average psychological category.--The deviations of the observed frequencies from the expected frequencies of below average psychological category were indecisive in English and social studies. When both years were merged and in 1950 the seniors in school size group 750-1499 achieved better than expected in natural sciences and mathematics. All the other school size groups achieved as expected in natural sciences and mathematics.

Summary and Conclusions

This chapter was devoted to the analysis of the American Council Psychological Examination scores and the American Council Cooperative Test scores in English, social studies, natural sciences, and mathematics made by 10,246 seniors in white senior high schools of Florida. The seniors were grouped by size of school in two ways: (1) 0-199, 200-299, 300-499, 500-999, and 1000-up, and (2) 0-499, 500-749, 750-1499, 1500-1999, and 2,000-up. There were so few seniors (154 in 1951 and 294 in 1950) in schools smaller than 500 that the conclusions in Part I include only the two school size groups 1000-up and 500-999.

TABLE XXXIX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE BELOW AVERAGE PSYCHOLOGICAL CATEGORY IN SENIOR HIGH SCHOOLS - PART II[a]

School Size Group	English			Social Studies			Natural Sciences			Mathematics		
	1951[b]	1950	M	1951	1950	S	1951	1950	M	1951	1950	M
	142[c]	143	144	145	146	147	148	149	150	151	152	153
2000-up	0	0	0	0	0	0	0	S	0	0	0	0
1500-1999	0	0	S	0	0	0	S	0	0	0	0	0
750-1499	0	0	0	S	S	0	0	+	+	S	+	+
500-749	S	0	0	0	S	0	0	0	0	0	S	0
0-499	S	0	S	0	0	0	0	0	0	S	0	0
Total	S	0	0	S	0	0	0	S	S	0	0	0

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "M," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered. "M," both years merged.

[c]Appendix table number.

Part I

The analysis of the achievement of seniors in school centers that were composed of grades 10-12 inclusive indicates:

1. There seemed to be a relationship between psychological scores and size of school in senior high schools. When both years were merged schools larger than 1000 evidenced a larger proportion of seniors with high psychological scores than the proportion of seniors with high scores when all the senior high schools were considered together. This was in agreement with the findings in all six-year schools. The seniors in school size group 500-999 had a larger proportion of low psychological scores than expected in senior high schools; however, this school size group had psychological scores as expected in six-year schools.

2. When intelligence was not considered the seniors in schools larger than 1000 indicated achievement better than expected in English and social studies. Achievement in natural sciences and mathematics was essentially independent of the size of school.

3. The achievement of the seniors in the above average psychological category in English and mathematics was independent of the size of school. There was a slight tendency for seniors in schools larger than 1000 to achieve better than expected in social studies and for seniors in school size group 500-999 to achieve better than expected in natural sciences.

4. The seniors in the average psychological category seemed to achieve about as expected in social studies and natural sciences. The seniors in schools larger than 1000 achieved better than expected in English. The achievement in English of the seniors in the 500-999 school size group was poorer than expected, yet this group achieved better than expected in mathematics in 1951.

5. The achievement in English, social studies, natural sciences, and mathematics of the seniors in the below average psychological category was independent of the size of school. Apparently the size of school is not a factor that influences the achievement of the seniors in the below average psychological category in senior high schools when these schools were grouped by size the same way in which all six-year schools were grouped.

Part II

1. School size group 2000-up had a larger proportion of seniors with high psychological scores than expected when both years were merged and in 1951. In Part I school size group 1000-up disclosed the same result and it seems as if the seniors in schools larger than 2000 were contributing the most to the favorable distribution of the 1000-up group.

2. When intelligence was not considered the seniors in schools larger than 2000 evidenced achievement better than expected in English, social studies, and natural sciences but about as expected in mathematics. The seniors in schools smaller

than 750 did and achieve as well as expected.

3. The achievement of seniors in the above average psychological category was about as expected in mathematics. Although there were only a few cases in which the deviations of observed from expected frequencies were significant, there was a tendency for schools larger than 1500 to show achievement better than expected and schools smaller than 1500 to indicate achievement poorer than expected.

4. The seniors with average psychological scores in school size group 750-1499 exhibited achievement better than expected in English, natural sciences, and mathematics. The achievement of the seniors in schools larger than 1500 was not conclusive.

5. The achievement in English and social studies of the seniors in the below average psychological category appeared to be independent of the size of school. When both years were merged and in 1950 school size group 750-1499 achieved better than expected in natural sciences and mathematics. With the exception of the favorable achievement of the 750-1499 school size group, achievement in natural sciences and mathematics was not significantly different from expected achievement.

CHAPTER IV

THE ANALYSIS OF ACHIEVEMENT OF SENIORS IN TWELVE-YEAR SCHOOLS

Twelve-year schools are school centers composed of grades 1-12 inclusive. The sizes of twelve-year schools were determined not by the membership in all twelve grades but by the average daily membership in grades 7-12. This procedure permits comparison with school centers composed of grades 7-12 inclusive or permits the merging of the two groups. It will be recalled that Chapter II was devoted to the analysis of achievement in all six-year schools which included both twelve-year and the junior-senior high schools. This chapter is devoted to the achievement of seniors in the twelve-year schools and Chapter V is devoted to the achievement of the seniors in junior-senior high schools.

This chapter analyses: (1) the distribution of psychological scores of seniors in twelve-year schools by size of schools and three psychological categories, (2) achievement of seniors by size of schools without considering intelligence level, and (3) achievement by size of school of seniors with different intelligence levels.

A little over 50 per cent of the white secondary schools in Florida were twelve-year schools in 1950 and 1951. An inspection of Table XXIV reveals that 51.0 per cent of the schools in 1951 and

TABLE XXIV

THE NUMBER OF SCHOOLS, NUMBER OF SENIORS TESTED, AND AVERAGE DAILY MEMBERSHIP OF TWELVE-YEAR SCHOOLS

School Size Group	No. Schools	No. Seniors Tested	Average Daily Membership	Per cent Schools	Per cent Seniors	Per cent Membership
			1951			
1000-up	0					
500-999	9	5,427	523	8.4	21.9	22.3
300-499	16	5,806	554	15.1	23.4	23.7
200-299	27	6,413	586	25.5	25.9	25.0
0-199	54	7,130	678	51.0	28.8	29.0
Total	106	24,776	2,341	100.0	100.0	100.0
			1950			
1000-up	0					
500-999	5	2,843	301	4.8	13.5	13.0
300-499	11	4,819	511	10.5	19.1	22.1
200-299	20	4,959	526	19.0	23.5	22.9
0-199	69	9,241	969	65.7	43.9	42.0
Total	105	21,062	2,307	100.0	100.0	100.0

65.7 per cent of the schools in 1950 were smaller than 200 yet these schools contained only 29 and 42 per cent respectively of the seniors tested.

Distribution of Psychological Scores

The psychological scores of the seniors tested in 1951 and 1950 were distributed by school size and three psychological categories. The psychological scores for the two years were not merged as they were in previous chapters.

From Table XXV it may be observed that the distribution of psychological scores of the seniors in school size group 500-999 was as expected in 1951. In 1950, however, the psychological scores of this school size group indicated an unfavorable deviation of observed from expected frequencies. As the two years did not agree, the unfavorable deviation of observed from expected frequencies could easily be due to chance variation. School size group 300-499 exhibited a larger proportion of seniors with high psychological scores than expected when compared with the psychological scores of all the seniors in twelve-year schools. School size group 0-199 contained a larger proportion of seniors with low psychological scores.

Achievement by Size of School without Considering Intelligence Level

The seniors in twelve-year schools larger than 300 indicated achievement in English, natural sciences, and mathematics better than expected in 1951. In 1950 where a deviation was significant it was

TABLE XIV

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND PSYCHOLOGICAL SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS[a]

School Size Group	Psychological	
	1951[b]	1950
	154[c]	155
1000-up		
500-999	0	-
300-499	+	+
200-299	0	0
0-199	-	-
Total	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant.

[b]The year test was administered.

[c]Appendix table number.

TABLE XLVI

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	156[c]	157	158	159	160	161	162	163
1000-up								
500-999	+	S	0	-	+	0	+	0
300-499	+	+	S	+	+	+	+	0
200-299	0	0	0	0	0	0	S	0
0-199	-	0	-	-	-	-	-	0
Total	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant.

[b]The year test was administered.

[c]Appendix table number.

favorable in these subjects.

English.--The seniors in school size group 300-499 seemed to achieve better than expected in English both years. The achievement of the seniors in school size group 500-999 was better than expected in 1951 and the deviation of observed from expected frequencies was not significant in 1950. The seniors in school size group 0-199 did not achieve as well as expected in 1951.

Social studies.--The seniors in schools smaller than 200 consistently indicated achievement in social studies poorer than expected. The achievement of seniors in school size group 300-499 was better than expected in 1950.

Natural sciences.--The seniors in schools larger than 300 tended to achieve better than expected in natural sciences. On the other hand, the seniors in school size group 0-199 did not achieve as well as expected.

Mathematics.--The achievement in mathematics of the seniors in twelve-year schools seemed to be independent of the size of schools in 1950. In 1951 the seniors in school size groups 300-499 achieved better than expected and the seniors in school size group 0-199 did not achieve as well as expected.

Achievement by Size of School of Three Intelligence Categories

There were only 2341 seniors tested in 1951 and 2307 in the twelve-year schools studied in this chapter. When these were subdivided into these psychological categories and these three

TABLE XXVII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE ABOVE AVERAGE PSYCHOLOGICAL CATEGORY IN TWELVE-YEAR SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	164[c]	165	166	167	168	169	170	171
1000-up								
500-999	0	0	0	0	0	0	0	0
300-499	0	0	0	0	0	0	0	0
200-299	0	0	0	0	0	0	0	0
0-199	0	0	0	0	0	0	0	0
Total	0	0	N	0	0	N	N	0

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered.

[c]Appendix table number.

psychological categories divided further into "four by three" contingency tables the frequencies were so small that significance was practically lost.

Above average psychological category.--The results of the analysis of achievement of the seniors in the above average psychological category as shown in Table XXVII indicated that the achievement of the seniors was independent of the size of school, i.e., the seniors in the above average psychological category seemed to achieve as well in one school size group as another.

Average psychological category.--The achievement of the seniors in the average psychological category indicated that the seniors in school size group 500-999 had a tendency to achieve better than expected, the seniors in school size group 0-199 did not achieve as well as expected in 1951. the achievement of this psychological category was more nearly like the achievement of all six-year schools than any other arrangement of the seniors in twelve-year schools.

Below average psychological category.--With the exception of the one deviation better than expected in 1951 in natural sciences the achievement of the seniors in the below average psychological category was independent of the size of school.

Summary and Conclusions

This chapter analyzed the achievement of seniors in twelve-year schools. There were 105 twelve-year schools in 1951 and 106 in

TABLE XXVIII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE AVERAGE PSYCHOLOGICAL CATEGORY IN TWELVE-YEAR SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	178[c]	173	174	175	176	177	178	179
1000-up								
500-999	+	0	+	0	+	+	+	0
300-499	0	0	0	0	S	0	0	0
200-299	0	S	0	0	0	S	0	0
0-199	-	0	-	0	-	S	-	0
Total	S	0	S	N	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered.

[c]Appendix table number.

TABLE XXIX

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE BELOW AVERAGE PSYCHOLOGICAL CATEGORY IN TWELVE-YEAR SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	180[c]	181	182	183	184	185	186	187
1000-up								
500-999	0	0	0	0	+	0	0	0
300-499	0	0	0	0	0	0	0	0
200-299	0	0	0	0	0	0	0	0
0-199	0	0	0	0	0	0	0	0
Total	0	0	N	0	0	N	0	0

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "0," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered.

[c]Appendix table number.

1950. Although there were a large number of schools the number of seniors tested was relatively small, approximately 2300.

The following conclusions were noted:

1. School size group 300-499 had a larger proportion of high psychological scores than the proportion of high psychological scores in all twelve-year schools. Psychological scores were lower than expected in school size group 0-199 both years.

2. When intelligence was not considered the seniors in school size group 300-499 seemed to achieve better than expected in all four subject areas. The achievement of the seniors in school size group 500-999 was better than expected in 1950 in English, natural sciences, and mathematics, but poorer than expected in social studies in 1950.

3. The achievement of the seniors in the above-average psychological category from twelve-year schools apparently was not influenced by the size of school.

4. The achievement of the seniors in the average psychological category indicated (when there was a significant deviation) that the seniors in schools larger than five hundred achieved better than expected and seniors in schools smaller than two hundred did not achieve as well as expected.

5. With the exception of the one favorable deviation of observed from expected frequencies in natural sciences in 1951 the achievement of the seniors in the below average psychological category appeared to be independent of the size of schools.

CHAPTER V

THE ANALYSIS OF ACHIEVEMENT OF THE SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS

This chapter analyses the achievement of the seniors in junior-senior high schools, i.e., school centers that were composed of grades 7-12 inclusive. The chapter considers: (1) the distribution of psychological scores of the seniors in junior-senior high schools by size of schools and three psychological categories, (2) achievement of seniors by size of schools without considering intelligence level, and (3) achievement by size of school of seniors with different intelligence levels.

From Table XXX it may be observed that 3,480 seniors from 58 different schools were tested in 1951 and 3,663 from 53 schools in 1950. The 1000-up school size group included about 41 per cent of the seniors tested each year. It is important to note that school size group 0-199 included only 43 seniors in 1951 and 107 in 1950. In previous chapters when the number of cases was small the deviation of observed from expected frequencies in the contingency tables seemed to be insignificant.

Distribution of Psychological Scores

The distribution of the psychological scores formed a consistent pattern in which both years were in agreement for each of the school size groups. The seniors in school size group 1000-up

TABLE XIX

THE NUMBER OF SCHOOLS, NUMBER OF SENIORS TESTED, AND AVERAGE DAILY MEMBERSHIP OF JUNIOR-SENIOR HIGH SCHOOLS

School Size Group	No. Schools	No. Seniors Tested	Average Daily Membership	Per cent Schools	Per cent Seniors	Per cent Membership
			1951			
1000-up	9	13,409	1,503	17.2	41.0	43.3
500-999	16	10,775	1,096	30.8	32.8	31.5
300-499	16	6,294	596	30.8	19.2	17.1
200-299	8	2,005	242	15.4	6.1	6.9
0-199	3	290	43	5.8	0.9	1.2
Total	52	32,773	3,480	100.0	100.0	100.0
			1950			
1000-up	9	12,446	1,641	17.0	40.8	44.6
500-999	11	7,568	839	20.8	24.8	22.7
300-499	10	7,635	875	35.8	25.0	23.8
200-299	9	2,261	221	17.0	7.4	6.0
0-199	5	621	107	9.4	2.0	2.9
Total	53	30,531	3,683	100.0	100.0	100.0

TABLE XXXI

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND PSYCHOLOGICAL SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS[a]

School Size Group	Psychological	
	1951[b]	1950
	189[c]	189
1000-up	+	+
500-999	0	0
300-499	-	-
200-299	-	-
0-199	0	0
Total	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant.

[b]The year test was administered.

[c]Appendix table number.

exhibited a larger proportion of seniors with a high psychological score than the proportion of seniors with high psychological scores of all the seniors tested in the junior-senior high schools. It seemed as if schools smaller than 500 had a larger proportion of seniors with low psychological scores than expected with the exception of the 0-199 school size group. The deviations of observed from expected frequencies were not significant in the 0-199 school size group.

Achievement by Size of School without Considering Intelligence Level

The achievement of the seniors in school size group 1000-up was better than expected in English, social studies, natural sciences, and mathematics for both years. The seniors in school size groups 500-999 and 300-499 did not achieve as well as expected in any of the four subject areas. It is interesting to observe that the deviation of observed from expected frequencies in school size group 0-199 was not significant in English, social studies, natural sciences, or mathematics.

English.--The seniors in schools larger than 1000 achieved better than expected in English. The achievement in English of the seniors in school size group 500-999 was as expected in 1951 but not as well as expected in 1950. The seniors in school size groups 200-299 and 300-499 did not achieve as well as expected in English.

Social studies.--The seniors in schools larger than 1000 achieved better that expected in social studies. The achievement

TABLE XXXII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	190[c]	191	192	193	194	195	196	197
1000-up	+	+	+	+	+	+	+	+
500-999	0	-	0	-	0	0	0	0
300-499	-	-	-	-	-	-	-	-
200-299	-	-	-	-	-	-	-	-
0-199	0	0	0	0	0	0	0	0
Total	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "S," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered.

[c]Appendix table number.

of the seniors in school size groups 200-299 and 300-499 was less than expected.

Natural sciences.—In so far as was shown in the summary tables the favorable, unfavorable, and inconclusive deviations of observed from expected frequencies in natural sciences were in agreement with the trends indicated by the psychological scores. the seniors in schools larger than 1000 indicated achievement better than expected. The seniors in school size groups 200-299 and 300-499 did not achieve as well as expected when compared with the achievement of all the seniors in junior-senior high schools.

Mathematics.—The seniors in school size group 1000-up achieved better than expected in mathematics. On the other hand, the seniors in school size groups 200-299 and 300-499 achieved poorer than expected. the deviation of observed from expected frequencies in school size groups 500-999 and 0-199 were not significant.

Achievement by Size of School of
Three Intelligence Categories

It was observed in Chapter IV that, when the number of observed frequencies was reduced, the number of significant deviations was also reduced. This tendency is clearly apparent in the analysis by intelligence categories in this chapter.

Above average psychological category.—The achievement of the seniors in the above average psychological category was independent of the size of school in English and natural sciences,

TABLE XXXIII

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE ABOVE AVERAGE PSYCHOLOGICAL CATEGORY IN JUNIOR-SENIOR HIGH SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	198[c]	199	200	201	202	203	204	205
1000-up	0	0	0	+	0	0	0	0
500-999	0	0	0	-	0	0	0	0
300-499	0	0	0	0	0	0	0	-
200-299	0	0	0	0	0	0	0	0
0-199	0	0	0	0	0	0	0	0
Total	S	S	S	S	S	S	S	S

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "S," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "S," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]The year test was administered.

[c]Appendix table number.

i.e., the seniors with above average intelligence seem to achieve about as expected in any school size group. There was a little evidence that the seniors in schools larger than 1000 achieved better than expected in social studies and that seniors in school size group 500-999 did not achieve so well as expected. The achievement in mathematics of seniors in school size group 300-499 in 1950 seemed to be inferior to the expected achievement.

Average psychological category.--There seemed to be little relationship between size of school and achievement in social studies, natural sciences, or mathematics of the seniors in the average psychological category. The seniors in schools larger than 1000 achieved better than expected in English in 1950. The seniors in school size group 200-299 did not achieve so well as expected either year in English.

Below average psychological category.--The seniors in the school size group 1000-up in 1951 achieved better than expected in English and social studies. The deviations of observed from expected frequencies were not significant in natural sciences or mathematics.

Summary and Conclusions

This chapter has analyzed the achievement of seniors in junior-senior high schools. The chapter included the test scores of 3,480 seniors in 1951 and 3,683 in 1950. The seniors were from 52 different schools in 1951 and 53 in 1950.

TABLE XXXIV

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE AVERAGE PSYCHOLOGICAL CATEGORY IN JUNIOR-SENIOR HIGH SCHOOLS[a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951[b]	1950	1951	1950	1951	1950	1951	1950
	206[c]	207	208	209	210	211	212	213
1000-up	0	+	0	0	0	0	0	0
500-999	0	0	0	0	0	0	0	0
300-499	0	0	0	0	0	0	0	0
200-299	-	-	0	0	0	0	0	0
0-199	0	0	0	0	0	0	0	0
Total	N	N	N	N	N	N	N	N

[a]Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "N," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b]the year test was administered.

[c]Appendix table number.

TABLE XXXV

SUMMARY OF CHI-SQUARE SIGNIFICANCE TESTS OF INTERDEPENDENCE BETWEEN SCHOOL SIZE AND ACHIEVEMENT FOR THE BELOW AVERAGE PSYCHOLOGICAL CATEGORY IN JUNIOR-SENIOR HIGH SCHOOLS [a]

School Size Group	English		Social Studies		Natural Sciences		Mathematics	
	1951 [b]	1950	1951	1950	1951	1950	1951	1950
	214 [c]	215	216	217	218	219	220	221
1000-up	+	0	+	N	0	0	0	0
500-999	0	0	0	0	0	0	N	0
300-499	N	N	N	0	0	0	0	N
200-299	0	0	0	0	0	N	0	0
0-199	0	N	0	N	0	0	0	0
Total	0	N	0	0	N	N	N	N

[a] Explanation of symbols: "+," achievement was considered significantly better than expected; "-," achievement was not considered as well as expected; "0," achievement was considered about as expected; "N," the sum of all the contributions to chi-square in the appendix contingency table was considered significant; and "N," the sum of the chi-squares in the appendix contingency table was not considered significant.

[b] The year test was administered.

[c] Appendix table number.

The following conclusions were indicated:

1. The psychological scores of the seniors in junior-senior high schools indicated the same results for the two years studied. The seniors in schools larger than 1000 seemed to have higher psychological scores than expected when compared with the psychological scores of all the seniors in junior-senior high schools. Using the same criterion the seniors in school size groups 200-499 and 300-499 evidenced lower psychological scores.

2. When intelligence was not considered the seniors in school size group 1000-up consistently achieved better than expected in all four subject areas. The achievement of the seniors in school size groups 200-299 and 300-499 was poorer than expected in English, social studies, natural sciences, or mathematics.

3. The achievement in English, natural sciences, and mathematics of the seniors in the above-average psychological category seemed to be independent of the size of school. There was a tendency for seniors in schools larger than 1000 to achieve better than expected in social studies.

4. Seniors in the average psychological category apparently achieved about as expected in social studies, natural sciences, and mathematics. The seniors in school size group 200-299 did not achieve as well as expected in English.

5. The achievement in natural sciences and mathematics of the seniors in the below-average psychological category seemed

to be independent of the size of school. The seniors in school size group 1500-up indicated achievement better than expected in English and social studies.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

An investigation was made in this study of the relationships between the size of school and academic achievement of high school seniors in the white schools of Florida. The schools were classified with respect to type of administrative organization as senior high schools, junior-senior high schools and twelve-year schools. Inasmuch as the average daily membership in grades 7-12 was used in determining the size of junior-senior high schools and the same criterion was used in determining the size of the high school division of the twelve-year schools these two administrative organizations were combined and classified as "all six-year high schools" as well as being treated as two separate organizational types.

A review was made of previous related studies to determine the scope and nature of research that had already been completed relative to this program. Numerous studies have indicated large schools may be operated at a lower cost per pupil and that large schools tend to offer a more comprehensive educational program than small schools. In the reviewed studies, cost per pupil and breadth of opportunity were widely used as criteria for determining

the adequacy of school size. However, research studies have presented little objective evidence concerning the relative achievement of seniors in schools which vary widely in size when achievement is measured for seniors of similar intelligence levels.

This study was devoted to an analysis of 109,110 test scores of 22,057 seniors in Florida secondary schools in 1950 and 1951. One hundred seventy-eight of the 209 white secondary schools in 1950 and 176 of the 208 in 1951 were included in the study.

the seniors were grouped in psychological categories according to their scores on the American Council on Education Psychological Examination. the American Council Cooperative Tests in English, social studies, natural sciences, and mathematics were used to measure achievement in these areas.

the size of the schools ranged from a low of 43 to a high of 2,625 in average daily membership, and the number of seniors tested at a school ranged from 2 to 585. Each of the 67 county school administrative units of Florida was represented by one or more schools.

The study was primarily concerned with answering the following questions from a statistical and a logical analysis of the data.

1. Are psychological scores distributed independently of the size of school?

2. When intelligence is not considered, is achievement in English, social studies, natural sciences, and mathematics independent of the size of school?

3. When seniors are grouped according to psychological scores, is achievement in English, social studies, natural sciences and mathematics independent of the size of school?

4. If achievement is related to school size, what school size groups achieve better than others: (1) when intelligence is not considered, and (2) when seniors are grouped according to their psychological scores?

5. The most frequently recommended minimum secondary school size is 300. Is this a desirable minimum from the standpoint of achievement of seniors?

Many statistical techniques of analyzing the data were carefully considered, such as: analysis of variance, regression equations together with partial and multiple correlation, and non-parametric statistics other than chi-square. After weighing the possibilities and anticipating the effort involved as well as the form of the final result, it seemed that more of the information for which the study was designed could be abstracted by the detailed use of chi-square and the contingency table than by using any other of the standard methods.

A contingency table is a double entry or a two-way table in which a group possessing two characteristics of varying degrees is represented. As used in this study, each group represented in a contingency table possessed the variable characteristics of school size and test scores. The school size groups were determined after consideration of the number of seniors tested, the number of schools, and the total membership in each school size group. The achievement and psychological categories were developed from the assumption that psychological scores and test scores were normally distributed. Each cell of the contingency tables contained three entries: (1) an expected frequency--the number of seniors expected in the cell if there were no association between the size of school and the distribution of the test scores represented in the table, (2) the observed frequencies--the number of seniors actually found in the cell as the result of the testing program, and (3) the contribution of the cell to chi-square--the square of the difference between the observed and expected frequencies divided by the expected frequency.

The chi-square statistic was used to determine the significance of the deviation of the observed from the expected frequencies in the 221 contingency tables designed to test the following null hypotheses:

Hypothesis 1.--The psychological scores of seniors are distributed independently of school size in senior high schools, junior-senior high schools, and twelve-year schools.

Hypothesis 2.—When intelligence is not considered the achievement of seniors in English, social studies, natural sciences, and mathematics is independent of school size.

Hypothesis 3.—When seniors are grouped according to psychological scores, achievement in English, social studies, natural sciences, and mathematics is independent of school size.

It should be noted that questions 1, 2, and 3, page 97 are restated in the form of the hypotheses set forth above.

The magnitude of the chi-square value of each of the various tables was used as the criterion in judging acceptance or rejection of the hypotheses. If the deviations of the observed from the expected frequencies produced a chi-square sufficiently large that it would be expected to occur by chance once or less in twenty trials (.05 level of confidence), the hypothesis was rejected. A rejected hypothesis suggested a relationship between size of school and the achievement of the seniors included in the contingency table. The analysis of achievement by school size group was then made in an effort to identify relationships.

The method of computing the expected frequency provided a means of comparing the achievement of the seniors in a particular school size group with the achievement of all the seniors included in the contingency table. The expected frequencies in a school size row were in the same proportion as the expected frequencies in the total row. The deviation of the observed from the expected

frequencies, therefore, was a measure of the difference between the achievement of the seniors in a school size group and the achievement of all the seniors included in the table. If the deviations in the above average and below average columns were real significant, achievement was judged about the same as the achievement exhibited by the total group, i.e., about as expected. If the deviations in these two columns were significant (the sum of the chi-squares greater than 5.99), achievement was judged better than expected or not as well as expected depending upon the direction of the deviation as determined from inspection.

Conclusions

The conclusions with respect to the achievement of school size groups by administrative organization are presented in terms of the hypotheses which were examined.

A. Hypothesis 1, Distribution of Psychological Scores.--The Psychological Scores of Seniors Are Distributed Independently of School Size in Senior High Schools, Junior-Senior High Schools, and Twelve-Year Schools

1. Senior high schools (average size 1266) - When both years were merged senior high schools larger than 2000 evidenced a larger proportion of seniors with high psychological scores than the proportion of seniors with high scores when all the seniors in senior high schools were considered together. The seniors in school size

group 500-749 seemed to have a larger proportion of low psychological scores than the proportion of low psychological scores of all the seniors in senior high schools.

2. Junior-senior high schools (Average size 405) - The seniors in junior-senior high schools larger than 1000 seemed to have a larger proportion of seniors with high psychological scores than the proportion of seniors with high scores in all the junior-senior schools taken together. The seniors in school size groups 200-299 and 300-499 exhibited a higher proportion of low psychological scores.

3. Twelve-year schools (Average size 217) - In twelve-year schools the seniors in school size group 300-499 exhibited a larger proportion of high psychological scores and school size group 0-199 a larger proportion of low psychological scores than the respective proportion in all the twelve-year schools taken together.

4. All six-year high schools (2 and 3 combined, Average size 345) - The proportion of seniors with high psychological scores in schools larger than 1000 was greater than the proportion of seniors with high scores in all the six-year schools taken together. Schools smaller than 500 evidenced a higher proportion of low psychological scores.

5. General conclusion - The contingency distributions of the psychological scores indicated chi-squares sufficiently large to reject the hypothesis that psychological scores are distributed independently of the size of school in senior high schools, junior-senior high schools, and twelve-year schools. It will be noted that the average sizes of the various types of administrative organizations differed widely, yet the schools larger than their respective averages tended to have a greater proportion of seniors with high test scores than the schools smaller than their respective averages.

B. Hypothesis 2, Achievement without Considering Intelligence.--When Intelligence Is Not Considered the Achievement of Seniors in English, Social Studies, Natural Sciences, and Mathematics Is Independent of School Size.

1. Senior high schools (average size 1266) - The seniors in schools larger than 2000 exhibited achievement better than expected in English, social studies, and natural sciences but about as expected in mathematics when intelligence was not considered. The achievement of the seniors in schools smaller than 750 was poorer than was expected in all of the subject areas studied.

2. Junior-senior high schools (Average size 603) - When intelligence was not considered the seniors in junior-senior high schools larger than 1000 achieved better than expected in all four subject areas. The achievement of the seniors in school size groups 200-299 and 300-499 was less than expected in English, social studies, natural sciences, or mathematics.

3. Twelve-year schools (Average size 217) - The achievement, intelligence not considered, of the seniors in twelve-year schools indicated that the seniors in school size group 300-499 achieved better than expected in English and natural sciences. The seniors in school size group 0-199 did not achieve as well as expected in social studies or natural sciences.

4. All six-year schools (2 and 3 combined, Average size 345) - When intelligence was not considered the achievement of seniors in schools larger than 1000 was significantly better than expected in all four subject areas. The seniors in schools smaller than 500 apparently did not achieve as well as expected.

5. General conclusion - The hypothesis that achievement of seniors in English, social studies, natural sciences, and mathematics is independent of size of school when intelligence is not considered was rejected.

C. Hypothesis 3, Achievement of Above Average Psychological Category.—When Seniors Are Grouped According to Psychological Scores, Achievement in English, Social Studies, Natural Sciences, and Mathematics Is Independent of School Size.

1. Senior high schools (Average size 1266) — The seniors with above average psychological scores in senior high schools exhibited achievement in mathematics about as expected. The achievement of this group in English, social studies, and natural sciences indicated an association, but no definite pattern, between the size of school and achievement in these subjects.

2. Junior-senior high schools (Average size 609) — The achievement in natural sciences and mathematics of the seniors in the above average psychological category from junior-senior high schools apparently was independent of the size of the school. The achievement of this group in English and social studies indicated some association between the size of school and achievement in these subjects.

3. Twelve-year schools (Average size 217) — The achievement of the seniors with above average psychological scores in English, social studies, natural sciences, and mathematics seemed to be independent of the size of school.

4. All six-year high schools (2 and 3 combined, Average size 365) - The achievement in English, social studies, and mathematics of the seniors with above average psychological scores in all six-year schools indicated hypothesis 3 may be rejected. The seniors in school size group 1000-up achieved better than expected in English and social studies.

5. General conclusion - The hypothesis that the achievement of seniors with above average psychological scores in English, social studies, natural sciences, and mathematics is independent of school size was rejected in one or more administrative organizations.

D. Hypothesis 4, Achievement of Average Psychological Category.--When Seniors Are Grouped According to Psychological Scores Achievement in English, Social Studies, Natural Sciences, and Mathematics Is Independent of School Size.

1. Senior high schools (Average size 1266) - The seniors with average psychological scores in senior high schools exhibited a varied pattern of achievement. The achievement of this group in English and social studies, however, indicated some association between size of school and achievement in these subjects.

2. Junior-senior high schools (Average size 603) - The achievement in social studies, natural sciences, and mathematics of seniors in the average psychological category in junior-senior high schools seemed to be

independent of the size of school. The seniors in school size group 200-299 did not achieve as well as expected in English.

3. Twelve-year schools (Average size 217) - The achievement of seniors in the average psychological category in twelve-year schools indicated a relationship between size of school and achievement in the natural sciences and mathematics. The seniors in school size group 500-999 seemed to achieve better than expected in these two subjects.

4. All six-year schools (2 and 3 combined, Average size 345) - The achievement of seniors in six-year schools with average psychological scores as measured by the total chi-squares for the contingency tables indicated a relationship with the size of school except in social studies and mathematics in 1950. Seniors attending schools larger than 1000 achieved better than expected in English and social studies but about as expected in natural sciences and mathematics. The seniors in school size group 0-199 did not achieve as well as expected in any of the subjects being investigated when both years were considered together or in 1951.

5. General conclusion - The hypothesis that the achievement of seniors with average psychological scores in English, social studies, natural sciences, and mathematics is independent

of school size was rejected in one or more administrative organizations.

E. Hypothesis 5, Achievement of Seniors with Below Average Psychological Scores.—When Seniors Are Grouped According to Psychological Scores Achievement in English, Social Studies, Natural Sciences, and Mathematics Is Independent of School Size.

1. Senior high schools (Average size 1266) - There seemed to be an association between the size of school and achievement in social studies, natural sciences, and mathematics of the seniors in the below average psychological category in senior high schools. The seniors in school size group 750-1499 had a tendency to achieve better than expected in natural sciences and mathematics.

2. Junior-senior high schools (Average size 603) - The achievement in natural sciences and mathematics of the seniors with below average psychological scores from junior-senior high schools seemed to be independent of the size of school. The achievement of the seniors in school size group 1000-up was better than expected in English and social studies.

3. Twelve-year schools (Average size 217) - Although there seemed to be a little relationship between achievement in the four subject areas and size of school the relationship was not pronounced enough to indicate

the school size group in which achievement was better than or worse than expected.

4. All six-year high schools (2 and 3 combined, Average size 345) - The seniors in all six-year schools with below average psychological scores indicated a relationship between size of school and the achievement in English, social studies, and natural sciences. The achievement in mathematics of this group seemed to be independent of the size of school. The seniors in school size group 1000-up exhibited achievement better than expected in English and social studies.

5. General conclusion - The hypothesis that the achievement of seniors with below average psychological scores in English, social studies, natural sciences, and mathematics is independent of school size was rejected in one or more administrative organizations.

Implications

There are many factors to be considered in determining the optimum size of high schools such as: population density, financial efficiency, social adjustment of pupils, participation in student activities, inconveniences of transportation, and community needs. This study, therefore, was concerned with only a fragment of the total problem of determining optimum school size. The analysis of the relationships between size of school and the academic achievement of practically all of the high school seniors in Florida for the two-year period 1950 and 1951 as one criterion suggests the following:

1. The seniors in six-year high schools smaller than 500 exhibited a larger proportion of low test scores than the proportion of low test scores of all the seniors in six-year high schools. This indicathe for the two years studied that school size group 0-500 was not the optimum school size group. Likewise, there was an indication that achievement of the seniors in schools ranging in size from 500-1000 was better than the achievement of the 0-500 school size group. As judged from the achievement of the seniors in all six-year schools the optimum school was 1000-up.

2. The optimum school size group for senior high schools in Florida was 2000-up as judged from the achievement of the seniors in 1950 and 1951.

3. There are those who contend that the fundamental subjects are being neglected in the broad educational programs of large high schools. Insofar as the American Council Tests in English, social studies, natural sciences, and mathematics administered to the high school seniors in Florida in 1950 and 1951 evaluated the effectiveness of various sizes of schools in teaching the fundamentals, the evidence seems to indicate that the large schools were more effective than the small schools in teaching the fundamentals.

4. This study indicates that for the two years studied there was an association between size of school and the achievement of high school seniors. It does not demonstrate that school size per se caused high or low achievement. The study suggests, however, that there are certain factors associated with school size which do have a causal

relationship to achievement. Additional research is needed to identify those factors and also to determine whether those factors are controllable or uncontrollable.

5. If the same factors affecting achievement are associated with the size of school in the future as they were for the two years studied, the following might be inferred for Florida:

a. The probability of a high proportion of seniors with low test scores will be reduced if the minimum size of all six-year schools is set at 500. It does not follow, however, that the 500 minimum size will assure the greatest probability of a high proportion of seniors with high test scores.

b. If 500 is set as the minimum and 1000 the maximum size of all six-year schools, there is a high degree of probability that the seniors will have about the same proportion of high and low test scores as the state average in Florida.

c. If 1000 is set as the minimum size of all six-year schools, the probability of a high proportion of the seniors making high test scores is increased and the probability of a high proportion of the seniors making low scores is decreased.

APPENDIX

TABLE 1

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951

School Size	[b]	Psychological Categories: Below Average [c]	Average	Above Average	Total
1000	E	571.90	553.80	377.20	1502.90
UP	O	367.00	590.00	546.00	1503.00
	X	73.41	2.37	75.54	151.32
500	E	616.10	596.60	406.30	1619.00
999	O	605.00	595.00	419.00	1619.00
	X	.20		.40	.60
300	E	437.60	423.80	288.60	1150.00
499	O	511.00	394.00	245.00	1150.00
	X	12.31	2.10	6.59	21.00
200	E	315.10	305.10	207.80	828.00
299	O	358.00	321.00	149.00	828.00
	X	5.84	.83	16.64	23.31
000	E	274.40	265.70	181.00	721.10
199	O	374.00	245.00	102.00	721.00
	X	36.15	1.61	34.48	72.24
TOTAL	E	2215.10	2145.00	1460.90	5821.00
	O	2215.00	2145.00	1461.00	5821.00
	X	127.91	6.91	133.65	268.47

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 8

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1950

School Size		Psychological Categories			
	[b]	Below Average [c]	Average	Above Average	Total
1000 UP	E	629.00	552.80	459.20	1641.00
	O	358.00	609.00	674.00	1641.00
	X	115.76	5.71	100.48	222.95
500 999	E	437.00	384.10	319.00	1140.10
	O	444.00	390.00	306.00	1140.00
	X	1.1	.9	1.3	3.3
300 499	E	531.30	466.90	387.80	1386.00
	O	568.00	490.00	328.00	1386.00
	X	2.54	1.14	9.22	12.90
200 299	E	286.30	251.70	209.00	747.00
	O	355.00	220.00	172.00	747.00
	X	16.49	3.99	6.55	27.03
000 199	E	412.40	362.50	301.10	1076.00
	O	571.00	309.00	196.00	1076.00
	X	60.99	7.90	36.69	105.58
TOTAL	E	2296.00	2018.00	1676.10	5990.10
	O	2296.00	2018.00	1676.00	5990.00
	X	196.89	18.83	153.47	369.19

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 3

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951 and 1950 COMBINED

School Size		Psychological Categories: Below Average [b]		Average		Above Average		Total	
1000 UP	E	1 2 0	8 0	1 1 0	8 2 0	8 3 5	0 0	3 1 4	4 0 0
	O	7 2	3 0 0	1 1 9	0 0	1 2 2	0 0 0	3 1 4	4 0 0
	X	1 8	8 5 3	7	1 4 4	1 7	7 5 2	3 7	3 4 9
500 999	E	1 0 5	3 8 0	9 7	2 5 0	7 3	2 8 0	2 7	5 9 1 0
	O	1 0 4	9 0 0	9	8 5 0 0	7	2 5 0 0	2 7	5 9 0 0
	X		2		1 6		8		2 6
300 499	E	9	6 8 6 0	9	3 9 0	6	7 3 6 0	2	5 3 6 1 0
	O	1 0	7 9 0 0	8	8 4 0 0	5	7 3 0 0	2	5 3 6 0 0
	X	1	2 5 8		1 1		1 5 0 2		2 7 1
200 299	E	6	0 1 5 0	5	5 5 1 0	4	1 8 3 0	1	5 7 4 9 0
	O	7	1 3 0 0	5	4 1 0 0	3	2 1 0 0	1	5 7 5 0 0
	X		2 0 6 7		3 6		2 2 6 3		4 3 6 6
000 199	E	6	8 6 1 3 0	6	3 3 1 4 0	4	7 7 3 0	1	7 9 7 0 0
	O	9	4 5 1 0 0	5	5 4 0 0	2	9 8 0 0	1	7 9 7 0 0
	X		9 7 5 2		9 9 5		6 7 3 8		1 7 4 8 3
TOTAL	E	4 5 1	1 0 0	4 1 6	3 1 0	3 1 3	7 0 0	1 1 8	1 1 2 0
	O	4 5 1	1 0 0	4 1 6	3 0 0	3 1 3	7 0 0	1 1 8	1 1 0 0
	X	3 1	9 3 2	1	8 0 2	2	8 2 6 1	6	1 9 9 5

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 4

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951

School Size	[b]	Achievement in English: Below Average [a]	Average	Above Average	Total
1000	E	594.30	546.00	358.70	1499.00
UP	O	400.00	586.00	513.00	1499.00
	X	63.52	2.93	66.37	132.82
500	E	641.10	586.00	386.90	1617.00
999	O	595.00	599.00	423.00	1617.00
	X	3.32	.17	3.37	6.86
300	E	455.50	418.50	274.90	1148.90
499	O	512.00	419.00	218.00	1149.00
	X	7.01		11.78	18.79
200	E	328.30	301.60	198.10	828.00
299	O	377.00	299.00	152.00	828.00
	X	7.22	.02	10.73	17.97
000	E	283.90	260.80	171.30	716.00
199	O	419.00	213.00	84.00	716.00
	X	64.29	9.76	44.49	117.54
TOTAL	E	2303.10	2115.90	1389.90	5808.90
	O	2303.00	2116.00	1390.00	5809.00
	X	145.36	11.88	136.74	293.98

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 5

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000	E	611'20	613'10	414'70	1639'00
UP	O	338'00	646'00	655'00	1639'00
	X	122'12	1'77	139'24	263'13
500	E	424'70	426'10	288'20	1139'00
999	O	417'00	459'00	263'00	1139'00
	X	'14	2'54	2'20	4'88
300	E	516'50	518'10	350'50	1385'10
499	O	561'00	528'00	296'00	1385'00
	X	3'63	'19	8'47	12'49
200	E	278'50	279'40	189'00	746'90
299	O	359'00	255'00	133'00	747'00
	X	23'27	2'13	16'59	41'99
000	E	400'10	401'40	271'50	1073'00
199	O	556'00	350'00	167'00	1073'00
	X	60'75	6'58	40'22	107'55
TOTAL	E	2231'00	2236'10	1513'90	5983'00
	O	2231'00	2236'00	1514'00	5983'00
	X	210'11	13'21	206'72	430'04

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 6

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL MEMBERS IN SIX-YEAR SCHOOLS, 1951 and 1950 MERGED

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000	E	1206[c]60	1158[c]70	772[c]80	3138[c]10
UP	O	738[c]00	1232[c]00	1168[c]00	3138[c]00
	X	181[c]99	4[c]64	202[c]10	388[c]73
500	E	1059[c]70	1017[c]60	679[c]70	2756[c]00
999	O	1012[c]00	1056[c]00	686[c]00	2756[c]00
	X	2[c]15	1[c]60	[c]8	3[c]83
300	E	974[c]30	935[c]60	624[c]00	2533[c]90
499	O	1073[c]00	947[c]00	514[c]00	2534[c]00
	X	10[c]00	[c]14	19[c]39	29[c]53
200	E	605[c]60	581[c]50	387[c]90	1575[c]00
299	O	736[c]00	554[c]00	285[c]00	1575[c]00
	X	28[c]08	1[c]30	27[c]30	56[c]68
000	E	687[c]90	660[c]60	440[c]60	1789[c]10
199	O	975[c]00	563[c]00	251[c]00	1789[c]00
	X	119[c]82	1[c]42	61[c]59	215[c]83
TOTAL	E	4534[c]10	4354[c]00	2904[c]00	11792[c]10
	O	4534[c]00	4354[c]00	2904[c]00	11792[c]00
	X	342[c]04	22[c]10	330[c]46	694[c]60

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 7

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL STATIONS IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies			
		Below Average [b]	Average [c]	Above Average	Total
1000	E	548.30	536.50	398.20	1483.00
UP	O	334.00	545.00	604.00	1483.00
	X	83.76	.14	106.36	190.26
500	E	596.70	583.90	433.30	1613.90
999	O	599.00	579.00	436.00	1614.00
	X	1	4	2	7
300	E	424.80	415.70	308.50	1149.00
499	O	475.00	424.00	250.00	1149.00
	X	5.93	.17	11.09	17.19
200	E	305.60	299.20	222.00	827.00
299	O	346.00	318.00	163.00	827.00
	X	5.28	1.18	15.68	22.14
000	E	264.40	258.70	192.00	715.10
199	O	386.00	228.00	101.00	715.00
	X	55.93	3.54	43.13	102.70
TOTAL	E	2140.00	2094.00	1554.00	5788.00
	O	2140.00	2094.00	1554.00	5788.00
	X	150.91	5.17	176.28	332.36

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 6

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1930

School Size		Achievement in Social Studies: Below Average [b]	Average	Above Average	Total
1000	E	61770	56160	44770	162700
UP	O	36300	57800	68600	162700
	X	10502	48	12684	23234
500	E	43240	39310	31340	113890
999	O	44000	42400	27500	113900
	X	13	243	471	727
300	E	52550	47770	38050	138400
499	O	54100	51300	33000	138400
	X	46	261	678	985
200	E	28320	25750	20530	74600
299	O	34900	23600	16100	74600
	X	1529	180	956	2665
000	E	40610	37110	29580	107500
199	O	57400	31000	19100	107500
	X	6744	1006	3713	11463
TOTAL	E	226690	206100	164300	597090
	O	226700	206100	164300	597100
	X	18834	1736	18502	39074

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 9

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951 AND 1950 MERGED

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
1000	E	1165.60	1096.90	845.50	3110.00
UP	O	697.00	1123.00	1290.00	3110.00
	X	188.39	.53	233.68	422.60
500	E	1031.80	972.80	748.50	2753.10
999	O	1039.00	1003.00	711.00	2753.00
	X	.5	.94	1.88	2.87
300	E	949.30	895.00	688.70	2533.00
499	O	1016.00	937.00	580.00	2533.00
	X	4.69	1.97	17.16	23.82
200	E	589.50	555.80	427.70	1573.00
299	O	695.00	554.00	324.00	1573.00
	X	18.88	1.	25.14	44.03
000	E	670.90	632.50	485.70	1790.10
199	O	960.00	538.00	292.00	1790.00
	X	124.56	14.12	77.89	216.59
TOTAL	E	4407.10	4155.00	3197.10	11759.20
	O	4407.00	4155.00	3197.00	11759.00
	X	336.59	17.57	355.75	709.91

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 10

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	504.90	559.70	399.40	1464.00
up	O	368.00	551.00	545.00	1464.00
	X	37.12	.14	53.08	90.34
500	E	555.20	615.60	439.20	1610.00
999	O	498.00	626.00	486.00	1610.00
	X	5.69	.18	4.99	11.06
300	E	396.60	439.70	313.70	1150.00
499	O	443.00	432.00	275.00	1150.00
	X	5.43	.14	4.77	10.34
200	E	284.80	315.80	225.40	826.00
299	O	321.00	340.00	165.00	826.00
	X	4.60	1.05	16.19	22.64
000	E	24.550	27.220	19.420	71.190
199	O	35.700	25.400	10.100	71.200
	X	50.54	1.22	44.73	96.59
TOTAL	E	1987.00	2203.00	1571.90	5761.90
	O	1987.00	2203.00	1572.00	5762.00
	X	103.58	3.53	123.76	230.97

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 11

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Natural Sciences: Below Average [c]	Average	Above Average	Total
1000	E	573.80	609.20	436.00	1619.00
UP	O	431.00	569.00	619.00	1619.00
	X	35.54	2.65	76.81	115.00
500	E	403.70	428.60	306.70	1139.00
999	O	360.00	461.00	318.00	1139.00
	X	4.73	2.45	1.42	7.60
300	E	488.10	518.10	370.80	1377.00
499	O	509.00	540.00	328.00	1377.00
	X	.90	.93	4.94	6.77
200	E	263.70	280.00	200.30	744.00
299	O	313.00	282.00	149.00	744.00
	X	9.22	.02	13.14	22.38
000	E	380.70	404.10	289.20	1074.00
199	O	497.00	382.00	189.00	1074.00
	X	35.53	.64	34.72	70.89
TOTAL	E	2110.00	2240.00	1603.00	5953.00
	O	2110.00	2240.00	1603.00	5953.00
	X	85.92	6.69	130.03	222.64

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 12

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951 AND 1950 MERGED

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	1078[c]80	1169[c]20	835[c]60	3083[c]00
UP	O	799[c]00	1120[c]00	1164[c]00	3083[c]00
	X	72[c]30	2[c]07	129[c]07	203[c]44
500	E	961[c]40	1042[c]60	745[c]00	2749[c]00
999	O	858[c]00	1087[c]00	804[c]00	2749[c]00
	X	11[c]12	1[c]69	4[c]67	17[c]68
300	E	883[c]80	958[c]40	684[c]90	2527[c]10
499	O	952[c]00	972[c]00	603[c]00	2527[c]00
	X	5[c]26	1[c]9	9[c]79	15[c]24
200	E	549[c]10	595[c]40	425[c]50	1570[c]00
299	O	634[c]00	622[c]00	314[c]00	1570[c]00
	X	13[c]13	1[c]9	29[c]22	43[c]54
000	E	624[c]60	77[c]40	484[c]00	1786[c]00
199	O	854[c]00	642[c]00	290[c]00	1786[c]00
	X	84[c]25	1[c]5	77[c]76	163[c]86
TOTAL	E	4097[c]10	4443[c]00	3175[c]00	11715[c]10
	O	4097[c]00	4443[c]00	3175[c]00	11715[c]00
	X	186[c]06	7[c]9	250[c]51	443[c]76

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 19

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SECTORS IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
1000	E	509.60	570.50	396.00	1476.10
UP	O	393.00	537.00	546.00	1476.00
	X	26.68	1.97	56.82	85.47
500	E	555.50	621.90	431.70	1609.10
999	O	529.00	633.00	447.00	1609.00
	X	1.26	.20	.54	2.00
300	E	396.00	443.30	307.70	1147.00
499	O	407.00	461.00	279.00	1147.00
	X	.31	.71	2.68	3.70
200	E	271.00	303.40	210.60	785.00
299	O	301.00	319.00	165.00	785.00
	X	3.32	.80	9.87	13.99
000	E	242.00	270.90	188.10	701.00
199	O	344.00	260.00	97.00	701.00
	X	42.99	1.44	44.12	87.55
TOTAL	E	1974.10	2210.00	1534.10	5718.20
	O	1974.00	2210.00	1534.00	5718.00
	X	74.56	4.12	114.03	192.71

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 14

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Mathematics			
		Below Average [b]	Average [c]	Above Average	Total
1000	E	532.10	653.00	425.90	1611.00
UP	O	371.00	634.00	606.00	1611.00
	X	40.78	.55	76.16	125.49
500	E	374.90	460.10	300.00	1135.00
999	O	351.00	494.00	290.00	1135.00
	X	1.52	2.50	.33	4.35
300	E	456.80	560.60	365.60	1383.00
499	O	493.00	574.00	316.00	1383.00
	X	2.87	.32	6.73	9.92
200	E	245.70	301.60	196.70	744.00
299	O	295.00	299.00	150.00	744.00
	X	9.89	.2	11.09	21.00
000	E	353.40	433.70	282.80	1069.90
199	O	453.00	408.00	209.00	1070.00
	X	28.07	1.52	19.26	48.85
TOTAL	E	1962.90	2409.00	1571.00	5942.90
	O	1963.00	2409.00	1571.00	5943.00
	X	91.13	4.91	113.57	209.61

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 15

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SIX-YEAR SCHOOLS, 1951 AND 1950 MERGED

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000	E	104220	122280	82200	308700
UP	O	76400	117100	115200	308700
	X	7426	219	13248	20893
500	E	92640	108690	73070	274400
999	O	88000	112700	73700	274400
	X	232	148	6	386
300	E	85420	100220	67370	253010
499	O	90000	103500	59500	253000
	X	246	107	919	1272
200	E	51620	60560	40710	152890
299	O	59600	61800	31500	152900
	X	1234	25	2084	3343
000	E	59790	70150	47160	177100
199	O	79700	66800	30600	177100
	X	6630	160	5815	12605
TOTAL	E	393690	461500	310510	1166100
	O	393700	461900	310500	1166100
	X	15768	659	22072	38499

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 16

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	12'70	152'00	379'30	544'00
UP	O	6'00	128'00	410'00	544'00
	X	3'53	3'79	2'49	9'81
500	E	9'70	116'50	290'80	417'00
999	O	10'00	118'00	289'00	417'00
	X	1	2	1	4
300	E	5'70	68'40	170'80	244'90
499	O	9'00	70'00	166'00	245'00
	X	1'91	4	14	2'09
200	E	3'50	41'90	104'60	150'00
299	O	6'00	51'00	93'00	150'00
	X	1'79	1'98	1'29	5'06
000	E	2'40	28'20	70'40	101'00
199	O	3'00	40'00	58'00	101'00
	X	15	4'94	2'18	7'27
TOTAL	E	34'00	407'00	1015'90	1456'90
	O	34'00	407'00	1016'00	1457'00
	X	7'39	10'77	6'11	24'27

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 17

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SCHOOLS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1930

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	25[3]0	23[6]40	41[1]30	67[3]00
UP	O	14[0]00	20[1]00	45[6]00	67[3]00
	X	5[0]5	5[3]0	5[3]0	15[6]5
500	E	11[1]50	10[7]10	18[6]40	30[5]00
999	O	8[0]0	12[2]00	17[5]00	30[5]00
	X	1[0]7	2[0]7	[7]0	3[8]4
300	E	12[3]0	11[5]20	20[0]40	32[7]90
499	O	16[0]0	11[9]00	19[3]00	32[8]00
	X	1[1]1	[1]3	[2]7	1[5]1
200	E	6[5]0	6[0]40	10[5]10	17[2]00
299	O	9[0]0	7[0]00	9[3]00	17[2]00
	X	[9]6	1[5]3	1[3]9	3[8]8
000	E	7[4]0	6[8]60	11[9]80	19[6]00
199	O	16[0]0	7[6]00	10[4]00	19[6]00
	X	10[0]0	[7]6	2[0]8	12[8]4
TOTAL	E	63[3]00	58[7]90	102[3]00	167[3]90
	O	63[3]00	58[6]00	102[3]00	167[4]00
	X	18[1]9	9[7]9	9[7]4	37[7]2

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 18

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951 AND 1950 MERGED

School Size		Achievement in English: Below Average	Average	Above Average	Total
1000	E	37.70	386.80	792.50	1217.00
UP	O	20.00	329.00	868.00	1217.00
	X	8.31	8.54	7.19	24.14
500	E	22.40	229.40	470.20	722.00
999	O	18.00	240.00	464.00	722.00
	X	.86	.49	.8	1.43
300	E	17.80	182.10	373.20	573.10
499	O	25.00	189.00	359.00	573.00
	X	2.91	.26	.54	3.71
200	E	10.00	102.30	209.70	322.00
299	O	15.00	121.00	186.00	322.00
	X	2.50	3.42	2.68	8.60
000	E	9.20	94.40	193.40	297.00
199	O	19.00	116.00	162.00	297.00
	X	10.46	4.95	5.10	20.51
TOTAL	E	97.10	995.00	2039.00	3131.10
	O	97.00	995.00	2039.00	3131.00
	X	25.04	17.76	15.59	58.39

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 19

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies			
		Below Average [c]	Average	Above Average	Total
1000 UP	E	11.90	132.00	398.10	542.00
	O	7.00	98.00	437.00	542.00
	X	2.02	8.76	3.80	14.58
500 999	E	9.20	101.80	307.00	418.00
	O	11.00	111.00	296.00	418.00
	X	.35	.83	.39	1.57
300 499	E	5.40	59.40	179.20	244.00
	O	3.00	68.00	173.00	244.00
	X	1.07	1.25	.21	2.53
200 299	E	3.30	36.30	109.40	149.00
	O	6.00	48.00	95.00	149.00
	X	2.21	3.77	1.90	7.88
000 199	E	2.20	24.60	74.20	101.00
	O	5.00	29.00	67.00	101.00
	X	3.57	.79	.70	5.06
TOTAL	E	32.00	354.10	1067.90	1454.00
	O	32.00	354.00	1068.00	1454.00
	X	9.22	15.40	7.00	31.62

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 20

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	22.50	174.00	473.50	670.00
Up	O	8.00	133.00	529.00	670.00
	X	9.34	9.66	6.51	25.51
500	E	10.20	79.20	215.60	305.00
999	O	17.00	92.00	196.00	305.00
	X	4.53	2.07	1.78	8.38
300	E	11.00	85.20	231.80	328.00
499	O	9.00	101.00	218.00	328.00
	X	.36	2.93	.82	4.11
200	E	5.80	44.70	121.60	172.10
299	O	9.00	52.00	111.00	172.00
	X	1.77	1.19	.92	3.89
000	E	6.60	50.90	138.50	196.00
199	O	13.00	56.00	127.00	196.00
	X	6.21	.51	.96	7.68
TOTAL	E	56.10	434.00	1181.00	1671.10
	O	56.00	434.00	1181.00	1671.00
	X	22.21	16.36	10.99	49.56

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 21

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000	E	34[1]10	305[6]0	872[3]0	1212[0]0
UP	O	15[0]0	231[0]0	966[0]0	1212[0]0
	X	10[7]0	18[2]1	10[0]7	38[9]8
500	E	20[4]0	182[3]0	520[3]0	723[0]0
999	O	28[0]0	203[0]0	492[0]0	723[0]0
	X	2[8]3	2[3]5	1[5]4	6[7]2
300	E	16[1]0	144[2]0	411[7]0	572[0]0
499	O	12[0]0	169[0]0	391[0]0	572[0]0
	X	1[0]4	4[2]7	1[0]4	6[3]5
200	E	9[0]0	80[9]0	231[0]0	320[9]0
299	O	15[0]0	100[0]0	206[0]0	321[0]0
	X	4[0]0	4[5]1	2[7]1	11[2]2
000	E	8[4]0	74[9]0	213[7]0	297[0]0
199	O	18[0]0	85[0]0	194[0]0	297[0]0
	X	10[9]7	1[3]6	1[8]2	14[1]5
TOTAL	E	88[0]0	787[9]0	2249[0]0	3124[9]0
	O	88[0]0	785[0]0	2249[0]0	3125[0]0
	X	29[5]4	30[7]0	17[1]8	77[4]2

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 22

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences[b]			
		Below Average[c]	Average	Above Average	Total
1000 UP	E	17110	15390	36800	53900
	O	18000	14400	37700	53900
	X	5	64	22	91
500 999	E	13330	11930	28540	41800
	O	9000	10900	30000	41800
	X	1139	89	75	303
300 499	E	7770	6940	16590	24300
	O	8000	7700	15800	24300
	X	1	83	38	122
200 299	E	4170	4250	10170	14890
	O	5000	5400	9000	14900
	X	2	311	135	448
000 199	E	3220	2880	6900	10100
	O	6000	3000	6500	10100
	X	2145	5	23	273
TOTAL	E	46000	41390	99000	144990
	O	46000	41400	99000	145000
	X	392	552	293	1237

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-squares. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 23

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Natural Sciences			
		Below Average	Average	Above Average	Total
1000 UP	E	31.30	213.40	424.30	669.00
	O	32.00	166.00	451.00	669.00
	X	.02	35.52	16.68	52.22
500 999	E	14.30	97.60	194.10	306.00
	O	12.00	98.00	196.00	306.00
	X	.37		.02	.39
300 499	E	15.20	103.70	206.10	325.00
	O	18.00	108.00	199.00	325.00
	X	.52	.18	.24	.94
200 299	E	8.00	54.90	109.10	172.00
	O	6.00	62.00	104.00	172.00
	X	.50	.92	.24	1.66
000 199	E	9.20	62.50	124.30	196.00
	O	10.00	78.00	108.00	196.00
	X	.07	3.84	2.14	6.05
TOTAL	E	78.00	532.10	1057.90	1668.00
	O	78.00	532.00	1058.00	1668.00
	X	1.48	.0846	.0432	1.4286

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 24

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 COMBINED

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP	E	48.00	366.50	793.50	1208.00
	O	50.00	330.00	828.00	1208.00
	X	.08	3.64	1.50	5.22
500 999	E	28.80	219.70	475.50	724.00
	O	21.00	207.00	496.00	724.00
	X	2.11	.73	.88	3.72
300 499	E	22.60	172.30	373.10	568.00
	O	26.00	165.00	357.00	568.00
	X	.51	.94	.69	2.14
200 299	E	12.80	97.40	210.80	321.00
	O	11.00	116.00	194.00	321.00
	X	.25	3.55	1.34	5.14
000 199	E	11.80	90.10	195.10	297.00
	O	16.00	108.00	173.00	297.00
	X	1.50	3.56	2.50	7.56
TOTAL	E	124.00	946.00	2048.00	3118.00
	O	124.00	946.00	2048.00	3118.00
	X	4.45	12.42	6.91	23.78

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 25

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	33.50	155.90	353.60	543.00
UP	O	24.00	136.00	383.00	543.00
	X	2.69	2.54	2.44	7.67
500	E	25.80	120.00	272.20	418.00
999	O	31.00	124.00	263.00	418.00
	X	1.05	.13	.31	1.49
300	E	15.00	69.80	158.20	243.00
499	O	15.00	69.00	159.00	243.00
	X		1		1
200	E	8.50	39.60	89.90	138.00
299	O	10.00	49.00	79.00	138.00
	X	.26	2.23	1.32	3.81
000	E	6.20	28.70	65.10	100.00
199	O	9.00	36.00	55.00	100.00
	X	1.27	1.86	1.57	4.70
TOTAL	E	89.00	414.00	939.00	1442.00
	O	89.00	414.00	939.00	1442.00
	X	5.27	6.77	5.64	17.68

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 26

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size	[b]	Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	35.20	220.50	410.20	665.90
UP	O	28.00	199.00	439.00	666.00
	X	1.47	2.10	2.02	5.59
500	E	16.10	101.00	187.90	305.00
999	O	12.00	112.00	181.00	305.00
	X	1.04	1.20	.25	2.49
300	E	17.20	107.90	200.80	325.90
499	O	25.00	104.00	197.00	326.00
	X	3.54	.14	.07	3.75
200	E	9.10	57.00	105.90	172.00
299	O	11.00	66.00	93.00	172.00
	X	.40	2.12	1.57	4.09
000	E	10.30	64.60	120.10	195.00
199	O	12.00	68.00	115.00	195.00
	X	.28	.18	.22	.68
TOTAL	E	87.90	551.00	1024.90	1663.80
	O	88.00	551.00	1025.00	1664.00
	X	6.73	5.74	4.13	16.60

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 27

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size	b	Achievement in Mathematics: Below Average	Average	Above Average	Total
1000	E	68.90	375.60	764.50	1209.00
UP	O	52.00	335.00	822.00	1209.00
	X	4.15	4.39	4.32	12.86
500	E	41.20	224.60	457.20	723.00
999	O	43.00	236.00	444.00	723.00
	X	.8	.58	.38	1.04
300	E	32.40	176.80	359.80	569.00
499	O	40.00	173.00	356.00	569.00
	X	1.78	.8	.4	1.90
200	E	17.70	96.30	196.00	310.00
299	O	21.00	117.00	172.00	310.00
	X	.62	4.45	2.94	8.01
000	E	16.80	91.70	186.50	295.00
199	O	21.00	104.00	170.00	295.00
	X	1.05	1.65	1.46	4.16
TOTAL	E	177.00	965.00	1964.00	3106.00
	O	177.00	965.00	1964.00	3106.00
	X	7.68	11.15	9.14	27.97

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 28

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000	E	153.60	319.60	115.70	588.90
UP	O	121.00	327.00	141.00	589.00
	X	6.92	.17	5.53	12.62
500	E	155.20	322.90	116.90	595.00
999	O	128.00	325.00	142.00	595.00
	X	4.77	.1	5.39	10.17
300	E	102.50	213.30	77.20	393.00
499	O	99.00	236.00	58.00	393.00
	X	.12	2.42	4.78	7.32
200	E	83.70	174.20	63.10	321.00
299	O	101.00	164.00	56.00	321.00
	X	3.58	.60	.80	4.98
000	E	63.90	133.00	48.10	245.00
199	O	110.00	111.00	24.00	245.00
	X	33.26	3.64	12.08	48.98
TOTAL	E	558.90	1163.00	421.00	2142.90
	O	559.00	1163.00	421.00	2143.00
	X	48.65	6.84	28.58	84.07

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 29

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in English			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP	E	151.70	321.20	135.10	608.00
	O	101.00	321.00	186.00	608.00
	X	16.94		19.18	36.12
500 999	E	97.30	206.00	86.70	390.00
	O	106.00	202.00	82.00	390.00
	X	.78	.8	1.26	1.12
300 499	E	122.00	258.30	108.70	489.00
	O	132.00	264.00	93.00	489.00
	X	1.82	1.3	3.27	3.22
200 299	E	54.90	116.20	48.90	220.00
	O	76.00	108.00	34.00	220.00
	X	9.72	1.58	4.54	14.84
000 199	E	77.10	163.20	68.70	309.00
	O	86.00	170.00	53.00	309.00
	X	1.68	0.28	3.59	5.55
TOTAL	E	503.00	1064.90	448.10	2016.00
	O	503.00	1065.00	448.00	2016.00
	X	29.94	1.07	29.84	60.85

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 30

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size	[b]	Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	305.70	641.20	250.10	1197.00
UP	O	222.00	646.00	327.00	1197.00
	X	22.92	.7	23.65	46.64
500	E	251.50	527.70	205.80	985.00
999	O	234.00	527.00	224.00	985.00
	X	1.22		1.61	2.83
300	E	225.20	472.50	184.30	882.00
499	O	231.00	500.00	151.00	882.00
	X	.15	1.60	6.02	7.77
200	E	138.10	289.80	113.00	540.90
299	O	179.00	272.00	90.00	541.00
	X	12.11	1.09	4.68	17.88
000	E	141.50	296.80	115.80	554.10
199	O	196.00	281.00	77.00	554.00
	X	20.99	.84	13.00	34.83
TOTAL	E	1062.00	2228.00	869.00	4159.00
	O	1062.00	2228.00	869.00	4159.00
	X	57.39	3.60	48.96	109.95

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 31

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	140.70	315.90	118.40	579.00
UP	O	108.00	322.00	149.00	579.00
	X	7.60	1	7.91	15.52
500	E	144.30	328.20	121.50	594.00
999	O	141.00	325.00	128.00	594.00
	X	8	3	35	46
300	E	95.70	217.70	80.60	394.00
499	O	99.00	224.00	71.00	394.00
	X	11	18	1.14	1.43
200	E	78.00	177.40	65.60	321.00
299	O	79.00	182.00	60.00	321.00
	X	1	12	48	61
000	E	59.30	134.80	49.90	244.00
199	O	91.00	125.00	28.00	244.00
	X	16.95	71	9.62	27.28
TOTAL	E	518.00	1176.00	436.00	2132.00
	O	518.00	1176.00	436.00	2132.00
	X	24.75	105	19.50	45.30

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 32

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000	E	151.60	327.50	122.90	602.00
UP	O	129.00	328.00	145.00	602.00
	X	3.37	.01	3.97	7.34
500	E	98.20	212.20	79.60	390.00
999	O	109.00	209.00	72.00	390.00
	X	1.19	.05	.73	1.97
300	E	123.20	266.00	99.80	489.00
499	O	119.00	271.00	99.00	489.00
	X	.14	.09	.01	.24
200	E	55.40	119.70	44.90	220.00
299	O	60.00	122.00	38.00	220.00
	X	.38	.04	1.06	1.48
000	E	77.60	167.60	62.90	308.10
199	O	89.00	163.00	56.00	308.00
	X	1.68	.13	.76	2.57
TOTAL	E	506.00	1093.00	410.10	2009.10
	O	506.00	1093.00	410.00	2009.00
	X	6.76	.31	6.53	13.60

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 33

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 COMBINED

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	292.00	547.70	241.30	1181.00
UP	O	237.00	550.00	294.00	1181.00
	X	10.36	1	11.51	21.88
500	E	243.30	539.60	201.00	983.90
999	O	250.00	534.00	200.00	984.00
	X	19	6	1	26
300	E	218.40	484.30	180.40	883.10
499	O	218.00	495.00	170.00	883.00
	X		24	60	84
200	E	133.80	295.70	110.50	541.00
299	O	139.00	304.00	98.00	541.00
	X	20	18	141	179
000	E	136.50	302.70	112.80	552.00
199	O	180.00	288.00	84.00	552.00
	X	13.86	71	7.35	21.92
TOTAL	E	1024.00	2271.00	846.00	4141.00
	O	1024.00	2271.00	846.00	4141.00
	X	24.61	1.20	20.88	46.69

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 34

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences[b] Below Average[c]	Average	Above Average	Total
1000	E	131.40	302.80	133.80	568.00
UP	O	120.00	301.00	147.00	568.00
	X	.99	.01	1.30	2.30
500	E	137.40	316.60	139.90	593.90
999	O	123.00	320.00	151.00	594.00
	X	1.51	.04	.88	2.43
300	E	90.90	209.50	92.60	393.00
499	O	92.00	199.00	102.00	393.00
	X	.01	.53	.95	1.49
200	E	74.30	171.10	75.60	321.00
299	O	79.00	171.00	71.00	321.00
	X	.30	.00	.28	.58
000	E	56.00	129.00	57.00	242.00
199	O	76.00	138.00	28.00	242.00
	X	7.14	.63	14.76	22.53
TOTAL	E	490.00	1129.00	498.90	2117.00
	O	490.00	1129.00	499.00	2118.00
	X	9.95	1.21	18.17	29.33

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 35

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	149[c]80	311[c]00	140[c]20	601[c]00
UP	O	159[c]00	289[c]00	153[c]00	601[c]00
	X	[c]57	[c]56	[c]117	[c]330
500	E	97[c]20	201[c]80	91[c]00	390[c]00
999	O	79[c]00	209[c]00	102[c]00	390[c]00
	X	[c]341	[c]26	[c]133	[c]500
300	E	121[c]60	252[c]50	113[c]90	488[c]00
499	O	112[c]00	268[c]00	108[c]00	488[c]00
	X	[c]76	[c]95	[c]31	[c]202
200	E	54[c]30	112[c]80	50[c]90	218[c]00
299	O	66[c]00	113[c]00	39[c]00	218[c]00
	X	[c]252		[c]278	[c]530
000	E	77[c]00	159[c]90	72[c]10	309[c]00
199	O	84[c]00	159[c]00	66[c]00	309[c]00
	X	[c]64	[c]1	[c]52	[c]117
TOTAL	E	499[c]90	1038[c]00	468[c]10	2006[c]00
	O	500[c]00	1038[c]00	468[c]00	2006[c]00
	X	[c]790	[c]278	[c]611	[c]1679

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 36

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size		Achievement in Natural Sciences: Below Average[c]	Average	Above Average	Total
1000	E	280[6]0	614[3]0	274[1]0	1169[0]0
UP	O	279[0]0	590[0]0	300[0]0	1169[0]0
	X	1	[9]6	2[4]5	3[4]2
500	E	236[2]0	517[1]0	230[7]0	984[0]0
999	O	202[0]0	529[0]0	253[0]0	984[0]0
	X	4[9]5	[2]7	2[1]6	7[3]8
300	E	211[5]0	462[9]0	205[6]0	881[0]0
499	O	204[0]0	467[0]0	210[0]0	881[0]0
	X	[2]7	[4]	[6]	[3]7
200	E	129[4]0	283[2]0	126[4]0	539[0]0
299	O	145[0]0	264[0]0	110[0]0	539[0]0
	X	1[8]8		2[1]3	4[0]1
000	E	132[3]0	289[5]0	129[2]0	551[0]0
199	O	160[0]0	297[0]0	94[0]0	551[0]0
	X	6[1]8	[2]0	9[5]9	15[9]7
TOTAL	E	990[0]0	2167[0]0	967[0]0	4124[0]0
	O	990[0]0	2167[0]0	967[0]0	4124[0]0
	X	13[2]9	1[4]7	16[3]9	31[1]5

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 37

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	147.00	288.30	136.70	572.00
UP	O	151.00	273.00	148.00	572.00
	X	.11	.61	.94	1.66
500	E	152.40	298.90	141.70	593.00
999	O	135.00	307.00	151.00	593.00
	X	1.99	.28	.61	2.82
300	E	100.70	197.60	93.70	392.00
499	O	91.00	201.00	100.00	392.00
	X	.93	.06	.42	1.41
200	E	79.90	156.80	74.30	311.00
299	O	82.00	157.00	72.00	311.00
	X	.06		.07	.13
000	E	60.90	119.50	56.60	237.00
199	O	82.00	123.00	32.00	237.00
	X	7.31	.10	10.69	18.10
TOTAL	E	540.90	1061.10	503.00	2105.00
	O	541.00	1061.00	503.00	2105.00
	X	10.40	1.19	12.73	24.32

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 36

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size	b	Achievement in Mathematics: Below Average c	Average	Above Average	Total
1000	E	142.00	319.90	138.10	600.00
UP	O	136.00	315.00	149.00	600.00
	X	.25	.08	.86	1.19
500	E	91.60	206.30	89.10	387.00
999	O	81.00	211.00	95.00	387.00
	X	1.23	.11	.39	1.73
300	E	116.00	261.30	112.80	490.10
499	O	120.00	275.00	95.00	490.00
	X	.14	.72	2.81	3.67
200	E	51.60	116.20	50.20	218.00
299	O	54.00	118.00	46.00	218.00
	X	.11	.03	.35	.49
000	E	72.90	164.20	70.90	308.00
199	O	83.00	149.00	76.00	308.00
	X	1.40	1.41	.37	3.18
TOTAL	E	474.10	1067.90	461.10	2003.10
	O	474.00	1068.00	461.00	2003.00
	X	3.13	2.35	.478	10.26

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 39

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 COMBINED

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
1000	E	289.60	607.40	275.00	1172.00
UP	O	287.00	588.00	297.00	1172.00
	X	.02	.62	1.76	2.40
500	E	242.10	507.90	230.00	980.00
999	O	216.00	518.00	246.00	980.00
	X	2.81	.20	1.11	4.12
300	E	217.90	457.10	207.00	882.00
499	O	211.00	476.00	195.00	882.00
	X	.22	.76	.70	1.70
200	E	130.70	274.20	124.10	529.00
299	O	136.00	275.00	118.00	529.00
	X	.21	.00	.30	.51
000	E	134.70	282.50	127.90	545.10
199	O	165.00	272.00	108.00	545.00
	X	6.82	.39	3.10	10.31
TOTAL	E	1015.00	2129.10	964.00	4108.10
	O	1015.00	2129.00	964.00	4108.00
	X	10.08	1.99	6.97	19.04

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 40

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000	E	270[60]	87[80]	7[60]	366[00]
UP	O	229[00]	124[00]	13[00]	366[00]
	X	6[40]	14[93]	3[84]	25[17]
500	E	446[50]	144[90]	12[60]	604[00]
999	O	438[00]	150[00]	16[00]	604[00]
	X	[16]	[18]	[92]	[1,26]
300	E	377[80]	122[60]	10[60]	511[00]
499	O	391[00]	111[00]	9[00]	511[00]
	X	[46]	[1,10]	[24]	[1,80]
200	E	264[70]	85[90]	7[50]	358[10]
299	O	269[00]	84[00]	5[00]	358[00]
	X	[7]	[4]	[83]	[94]
000	E	273[50]	88[80]	7[70]	370[00]
199	O	306[00]	61[00]	3[00]	370[00]
	X	[3,86]	[8,71]	[2,90]	[15,47]
TOTAL	E	1633[10]	530[00]	46[00]	2209[10]
	O	1633[00]	530[00]	46[00]	2209[00]
	X	[10,95]	[24,96]	[8,73]	[44,64]

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 41

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in English: Below Average [b]	Average [c]	Above Average	Total
1000	E	260.00	91.30	6.70	358.00
UP	O	223.00	124.00	11.00	358.00
	X	5.27	11.71	2.76	19.74
500	E	322.40	113.30	8.30	444.00
999	O	303.00	135.00	6.00	444.00
	X	1.17	4.16	.64	5.97
300	E	412.40	144.90	10.70	568.00
499	O	413.00	145.00	10.00	568.00
	X			.5	.5
200	E	257.80	90.60	6.70	355.10
299	O	272.00	77.00	6.00	355.00
	X	1.78	2.04	.7	2.89
000	E	412.40	144.90	10.70	568.00
199	O	454.00	104.00	10.00	568.00
	X	4.20	11.55	.8	15.83
TOTAL	E	1665.00	585.00	43.10	2293.10
	O	1665.00	585.00	43.00	2293.00
	X	11.42	29.46	.360	44.48

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE A9

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SCHOOLS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	530[40]	179[30]	14[30]	724[00]
	O	452[00]	248[00]	24[00]	724[00]
	X	11[59]	26[32]	6[58]	44[49]
500 999	E	767[70]	259[60]	20[70]	1048[00]
	O	741[00]	285[00]	22[00]	1048[00]
	X	[93]	2[49]	[8]	3[50]
300 499	E	790[40]	267[20]	21[30]	1078[90]
	O	804[00]	256[00]	19[00]	1079[00]
	X	[23]	[47]	[25]	[95]
200 299	E	522[30]	176[60]	14[10]	713[00]
	O	541[00]	161[00]	11[00]	713[00]
	X	[67]	1[38]	[68]	2[73]
000 199	E	687[10]	232[30]	18[50]	937[90]
	O	760[00]	165[00]	13[00]	938[00]
	X	7[73]	19[60]	1[67]	28[90]
TOTAL	E	3297[90]	1115[00]	88[90]	4501[80]
	O	3298[00]	1115[00]	89[00]	4502[00]
	X	21[15]	50[16]	9[26]	80[67]

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 43

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SCHOOLS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
1000	E	260.70	92.10	8.20	361.00
UP	O	219.00	125.00	17.00	361.00
	X	6.67	11.75	9.44	27.86
500	E	431.10	152.40	13.60	597.10
999	O	442.00	143.00	12.00	597.00
	X	.28	.58	.19	1.05
300	E	372.60	131.70	11.70	516.00
499	O	378.00	132.00	6.00	516.00
	X	.8		2.78	2.86
200	E	258.50	91.40	8.10	358.00
299	O	261.00	88.00	9.00	358.00
	X	.3	1.3	.10	2.6
000	E	267.20	94.40	8.40	370.00
199	O	290.00	74.00	6.00	370.00
	X	1.95	4.41	.69	7.05
TOTAL	E	1590.10	562.00	50.00	2202.10
	O	1590.00	562.00	50.00	2202.00
	X	9.01	16.87	13.20	39.08

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 44

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	264.20	822.70	81.10	355.00
UP	O	226.00	1177.00	122.00	355.00
	X	5.52	14.23	1.88	21.63
500	E	330.40	103.50	10.10	444.00
999	O	314.00	123.00	7.00	444.00
	X	1.81	3.67	1.95	5.43
300	E	422.00	132.20	12.90	567.10
499	O	413.00	141.00	13.00	567.00
	X	1.19	.59		.78
200	E	263.50	82.50	8.00	354.00
299	O	280.00	62.00	12.00	354.00
	X	1.03	5.10	2.00	8.13
000	E	424.90	133.10	13.00	571.00
199	O	472.00	91.00	8.00	571.00
	X	5.22	13.38	1.92	20.46
TOTAL	E	1705.00	534.00	52.10	2291.10
	O	1705.00	534.00	52.00	2291.00
	X	12.77	36.91	6.75	56.43

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 45

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	525.10	174.70	16.30	716.10
	O	445.00	242.00	29.00	716.00
	X	12.22	25.93	9.90	48.05
500 999	E	763.40	253.90	23.60	1040.90
	O	756.00	266.00	19.00	1041.00
	X	.7	.58	1.90	1.55
300 499	E	794.20	264.20	24.60	1083.00
	O	791.00	273.00	19.00	1083.00
	X	1	.29	1.28	1.58
200 299	E	522.20	173.70	16.20	712.10
	O	541.00	150.00	21.00	712.00
	X	.68	3.23	1.42	5.33
000 199	E	690.10	229.50	21.40	941.00
	O	762.00	165.00	14.00	941.00
	X	7.49	18.13	2.56	28.18
TOTAL	E	3295.00	1096.00	102.10	4493.10
	O	3295.00	1096.00	102.00	4493.00
	X	20.47	48.16	16.06	84.69

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 46

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	236.10	107.40	13.50	357.00
UP	O	230.00	106.00	21.00	357.00
	X	1.16	.02	4.17	4.35
500	E	394.80	179.60	22.60	597.00
999	O	366.00	197.00	34.00	597.00
	X	2.10	1.69	5.75	9.54
300	E	339.90	154.60	19.40	513.90
499	O	343.00	156.00	15.00	514.00
	X	.03	.01	1.00	1.04
200	E	236.10	107.40	13.50	357.00
299	O	237.00	115.00	5.00	357.00
	X		.54	5.35	5.89
000	E	244.00	111.00	14.00	369.00
199	O	275.00	86.00	8.00	369.00
	X	3.94	5.63	2.57	12.14
TOTAL	E	1450.90	660.00	83.00	2193.90
	O	1451.00	660.00	83.00	2194.00
	X	6.23	7.89	16.84	32.96

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 47

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1950

School Size		Achievement in Natural Sciences: Below Average	Average	Above Average	Total
1000	E	234.60	102.60	11.80	349.00
UP	O	240.00	94.00	15.00	349.00
	X	1.2	7.2	0.7	1.71
500	E	297.80	130.20	15.00	443.00
999	O	269.00	154.00	20.00	443.00
	X	2.79	4.35	1.67	8.81
300	E	373.10	165.60	19.10	564.00
499	O	379.00	164.00	21.00	564.00
	X		.2	1.9	2.1
200	E	238.00	104.10	12.00	354.10
299	O	241.00	107.00	6.00	354.00
	X	.4	.8	3.00	3.12
000	E	382.50	167.30	19.20	569.00
199	O	403.00	151.00	15.00	569.00
	X	1.10	1.59	.92	3.61
TOTAL	E	1532.00	670.00	77.10	2279.10
	O	1532.00	670.00	77.00	2279.00
	X	4.05	6.76	6.65	17.46

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 48

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS SIXTH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 COMBINED

School Size		Achievement in Natural Sciences[b]			
		Below Average[c]	Average	Above Average	Total
1000 UP	E	470.80	2091.90	25.30	7068.00
	O	470.00	2090.00	36.00	7060.00
	X	.17	1.47	4.53	5.00
500 999	E	693.60	3092.20	37.20	10400.00
	O	635.00	3510.00	54.00	10400.00
	X	4.95	5.65	7.59	18.19
300 499	E	718.90	3205.0	38.60	10780.00
	O	782.00	3200.00	36.00	10780.00
	X	1		.18	1.19
200 299	E	474.20	2114.0	25.40	7110.00
	O	478.00	2220.00	11.00	7110.00
	X	3	1.53	8.16	8.72
000 199	E	625.50	2789.0	33.60	9380.00
	O	678.00	2370.00	23.00	9380.00
	X	4.41	6.29	3.34	14.04
TOTAL	E	2983.00	13299.0	160.10	44730.00
	O	2983.00	13300.00	160.00	44730.00
	X	9.40	12.94	23.80	46.14

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 49

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
1000	E	223.50	122.20	15.30	361.00
UP	O	216.00	128.00	17.00	361.00
	X	0.14	0.28	0.27	0.43
500	E	370.20	202.50	25.30	598.00
999	O	363.00	202.00	33.00	598.00
	X	0.14	0.00	2.34	2.48
300	E	317.00	173.30	21.70	512.00
499	O	301.00	191.00	20.00	512.00
	X	0.81	1.81	0.13	2.75
200	E	208.00	113.80	14.20	336.00
299	O	209.00	113.00	14.00	336.00
	X	0.00	0.01	0.00	0.02
000	E	225.30	123.20	15.40	363.90
199	O	253.00	101.00	10.00	364.00
	X	3.41	4.00	1.89	9.30
TOTAL	E	1344.00	735.00	91.90	2170.90
	O	1344.00	735.00	92.00	2171.00
	X	4.51	6.10	4.37	14.98

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 30

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS, 1930

School Size		Achievement in Mathematics: Below Average	Average	Above Average	Total
1000	E	212.40	119.70	12.90	345.00
UP	O	207.00	120.00	18.00	345.00
	X	1.14		2.02	2.16
500	E	272.70	153.80	16.50	443.00
999	O	258.00	171.00	14.00	443.00
	X	.79	1.92	.38	3.09
300	E	349.00	196.80	21.20	567.00
499	O	348.00	195.00	24.00	567.00
	X		.02	.37	.39
200	E	217.90	122.90	13.20	354.00
299	O	230.00	113.00	11.00	354.00
	X	.67	.80	.37	1.84
000	E	349.00	196.80	21.20	567.00
199	O	358.00	191.00	18.00	567.00
	X	.23	.17	.48	.88
TOTAL	E	1401.00	790.00	85.00	2276.00
	O	1401.00	790.00	85.00	2276.00
	X	1.83	2.91	3.62	8.36

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 52

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SIX-YEAR SCHOOLS 1951 AND 1950 MERGED

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000	E	435.80	242.10	26.10	706.00
UP	O	425.00	246.00	33.00	706.00
	X	1.27	0.14	1.85	1.26
500	E	642.60	357.00	41.40	1041.00
999	O	621.00	373.00	47.00	1041.00
	X	1.73	0.72	0.76	2.21
300	E	666.00	370.00	42.90	1078.90
499	O	649.00	386.00	44.00	1079.00
	X	0.43	0.69	0.03	1.15
200	E	425.90	236.60	27.50	690.00
299	O	439.00	226.00	25.00	690.00
	X	0.40	0.48	0.23	1.11
000	E	574.70	319.30	37.10	931.10
199	O	611.00	292.00	28.00	931.00
	X	2.29	2.33	2.23	6.85
TOTAL	E	2745.00	1525.00	177.00	4447.00
	O	2745.00	1 525.00	177.00	4447.00
	X	4.12	4.36	4.10	12.58

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 52

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I)
1951

School Size		Psychological Categories			
		Below Average [b] [c]	Average	Above Average	Total
1000	E	881.40	1458.00	1479.60	3820.00
UP	O	780.00	1478.00	1554.00	3020.00
	X	9.90	.25	3.72	13.07
500	E	298.10	493.40	500.50	1292.00
999	O	394.00	471.00	427.00	1292.00
	X	30.05	1.02	10.79	42.66
300	E	21.20	35.10	35.60	91.90
499	O	22.00	33.00	37.00	92.00
	X	.3	.13	.6	.22
200	E	14.30	23.70	24.00	62.00
299	O	11.00	29.00	22.00	62.00
	X	.76	1.19	.18	2.13
000	E				
199 [a]	O				
	X				
TOTAL	E	1215.00	2011.00	2039.90	5265.90
	O	1215.00	2011.00	2040.00	5266.00
	X	41.54	2.59	14.75	5.00

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" row observed frequencies, and the "X" row the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 53

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I)
1950

School Size	b	Psychological Categories: Below Average c	Average	Above Average	Total
1000	E	1053[8]0	1409[6]0	1347[6]0	3811[0]0
UP	O	1045[0]0	1383[0]0	1383[0]0	3811[0]0
	X	[7]	[5]0	[9]3	[1]50
500	E	241[9]0	323[6]0	309[4]0	874[9]0
999	O	261[0]0	335[0]0	279[0]0	875[0]0
	X	[1]51	[4]0	[2]99	[4]90
300	E	63[0]0	84[3]0	80[6]0	227[9]0
499	O	62[0]0	94[0]0	72[0]0	228[0]0
	X	[ ]2	[1]12	[ ]92	[2]06
200	E	18[2]0	24[4]0	23[3]0	[6]5[9]0
299	O	[9]0	30[0]0	27[0]0	[6]6[0]0
	X	[4]65	[1]29	[ ]61	[ ]655
000	E				
199[a]	O				
	X				
TOTAL	E	1376[9]0	1841[9]0	1760[9]0	4979[7]0
	O	1377[0]0	1842[0]0	1761[0]0	4980[0]0
	X	[6]25	[3]31	[5]45	[1]501

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 54

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I)
1951 AND 1950 COMBINED

School Size		Psychological Categories: Below Average [c]	Average	Above Average	Total
1000	E	1930.50	2869.60	2830.90	7631.00
UP	O	1833.00	2861.00	2937.00	7631.00
	X	4.92	.13	3.98	8.93
500	E	548.20	814.90	803.90	2167.00
999	O	655.00	806.00	706.00	2167.00
	X	20.81	.10	11.92	32.83
300	E	81.00	120.30	118.70	320.00
499	O	84.00	127.00	109.00	320.00
	X	.11	.37	.79	1.27
200	E	32.40	48.10	47.50	128.00
299	O	20.00	59.00	49.00	128.00
	X	4.75	2.47	.5	7.27
000	E				
199[a]	O				
	X				
TOTAL	E	2592.10	3852.90	3801.00	10246.00
	O	2592.00	3853.00	3801.00	10246.00
	X	30.59	2.97	16.74	50.30

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 55

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size	b	Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	933.70	1507.10	1370.10	3810.90
up	O	846.00	1530.00	1435.00	3811.00
	X	8.24	.35	3.07	11.66
500	E	316.50	511.00	464.50	1292.00
999	O	400.00	482.00	410.00	1292.00
	X	22.03	1.65	6.39	30.07
300	E	22.50	36.40	33.10	92.00
499	O	27.00	39.00	26.00	92.00
	X	.90	.19	1.52	2.61
200	E	15.20	24.50	22.30	62.00
299	O	15.00	28.00	19.00	62.00
	X	.3	.50	.54	1.07
000	E				
199 [a]	O				
	X				
TOTAL	E	1287.90	2079.00	1890.00	5256.90
	O	1288.00	2079.00	1890.00	5257.00
	X	31.20	2.69	11.52	45.41

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 56

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN JUNIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	940.10	1432.70	1418.20	3791.00
UP	O	871.00	1446.00	1474.00	3791.00
	X	5.08	12.20	220.74	740
500	E	216.20	329.60	326.20	872.00
999	O	261.00	312.00	299.00	872.00
	X	9.28	.94	2.27	12.49
300	E	56.30	85.80	84.90	227.00
499	O	81.00	63.00	63.00	227.00
	X	10.84	9.65	5.65	16.58
200	E	16.40	24.90	24.70	66.00
299	O	16.00	32.00	18.00	66.00
	X	.5	2.03	1.87	3.95
000	E				
199 [a]	O				
	X				
TOTAL	E	1229.00	1873.00	1854.00	4956.00
	O	1229.00	1873.00	1854.00	4956.00
	X	25.25	3.18	11.99	40.42

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 57

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I)
1951 AND 1950 COMBINED

School Size	[b]	Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	1873.50	2941.70	2786.80	7602.00
UP	O	1717.00	2976.00	2909.00	7602.00
	X	13.07	.40	5.36	18.83
500	E	533.30	837.40	793.30	2164.00
999	O	661.00	794.00	709.00	2164.00
	X	30.58	2.25	8.96	41.79
300	E	76.60	123.40	116.00	318.00
499	O	108.00	122.00	89.00	319.00
	X	11.00	.02	6.66	17.68
200	E	31.50	49.50	46.00	127.00
299	O	31.00	60.00	37.00	128.00
	X	.04	2.28	2.13	4.45
000 [a]	E				
199	O				
	X				
TOTAL	E	2516.00	3952.00	3743.00	10212.00
	O	2517.00	3952.00	3744.00	10213.00
	X	.0469	.0495	.0231	.0827

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 28

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Social Studies: Below Average [b]	Average	Above Average	Total
1000	E	979.70	1453.20	1356.20	3789.10
UP	O	888.00	1435.00	1466.00	3789.00
	X	8.58	0.23	6.89	17.70
500	E	333.50	494.80	461.70	1290.00
999	O	410.00	515.00	365.00	1290.00
	X	17.55	0.82	20.25	38.62
300	E	23.80	35.30	32.90	92.00
499	O	33.00	34.00	25.00	92.00
	X	3.56	0.05	1.90	5.51
200	E	16.00	23.80	22.20	62.00
299	O	22.00	23.00	17.00	62.00
	X	2.28	0.04	1.24	3.56
000	E				
199 [a]	O				
	X				
TOTAL	E	1353.00	2007.10	1873.00	5233.10
	O	1353.00	2007.00	1873.00	5233.00
	X	31.97	1.14	32.26	65.39

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 59

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	991.10	1397.90	1401.00	3790.00
UP	O	937.00	1409.00	1444.00	3790.00
	X	2.95	.9	1.32	4.36
500	E	228.00	321.60	322.30	871.90
999	O	253.00	305.00	314.00	872.00
	X	2.74	.86	.21	3.81
300	E	59.60	84.10	84.30	228.00
499	O	86.00	69.00	53.00	228.00
	X	11.69	2.9	11.62	23.60
200	E	17.30	24.30	24.40	66.00
299	O	20.00	25.00	21.00	66.00
	X	.43	.6	.50	.99
000	E				
199 [a]	O				
	X				
TOTAL	E	1296.00	1827.90	1832.00	4955.90
	O	1296.00	1828.00	1832.00	4956.00
	X	17.81	1.30	13.65	32.76

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 60

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I) 1951 AND 1950 MERGED

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	197040	285260	275590	757890
UP	O	182500	284400	291000	757900
	X	1073	3	862	1936
500	E	56210	81370	78620	216200
999	O	66300	82000	67900	216200
	X	1811	5	1462	3278
300	E	83120	120440	116440	320000
499	O	119900	123000	78100	320000
	X	1540	6	1267	2813
200	E	33130	48020	46450	128000
299	O	42000	48000	38000	128000
	X	227		158	385
000	E				
199	O				
[a]	X				
TOTAL	E	2649000	3834900	3705100	10188900
	O	2649000	3835000	3705000	10189000
	X	46.51	.14	37.49	84.14

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 61

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Natural Sciences			
		Below Average [a]	Average	Above Average	Total
1000	E	972.20	1475.30	1305.50	3753.00
UP	O	939.00	1467.00	1347.00	3753.00
	X	1.13	.5	1.32	2.50
500	E	333.10	505.50	447.30	1285.90
999	O	364.00	517.00	405.00	1286.00
	X	2.87	.26	4.00	7.13
300	E	23.30	35.40	31.30	90.00
499	O	23.00	30.00	37.00	90.00
	X		.82	1.04	1.86
200	E	16.30	24.80	21.90	63.00
299	O	19.00	27.00	17.00	63.00
	X	.46	.21	1.14	1.81
000	E				
199	O				
	X				
TOTAL	E	1344.90	2041.00	1806.00	5191.90
	O	1345.00	2041.00	1806.00	5192.00
	X	4.46	1.34	7.50	13.30

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 62

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000 up	E	1076.70	1504.90	1204.40	3786.00
	O	1075.00	1486.00	1225.00	3786.00
	X		.24	.35	.59
500 999	E	247.70	346.20	277.10	871.00
	O	237.00	354.00	280.00	871.00
	X	.46	.18	.03	.67
300 499	E	64.80	90.60	72.50	227.90
	O	75.00	101.00	52.00	228.00
	X	1.61	1.19	5.80	8.60
200 299	E	18.80	26.20	21.00	66.00
	O	21.00	27.00	18.00	66.00
	X	.27	.04	.49	.80
000 199 [a]	E				
	O				
	X				
TOTAL	E	1408.00	1967.90	1575.00	4950.90
	O	1408.00	1968.00	1575.00	4951.00
	X	2.34	1.65	6.67	10.66

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 63

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I)
1951 AND 1950 MERGED

School Size		Achievement in Natural Sciences: Below Average [c]	Average	Above Average	Total
1000	E	204620	297980	251300	753900
Up	O	201400	295300	257200	753900
	X	51	24	139	214
500	E	58550	85250	71900	215700
999	O	60100	87100	68500	215700
	X	41	40	161	242
300	E	86130	125370	106600	318000
499	O	98800	131100	89000	318000
	X	1,59	22	273	454
200	E	35100	51100	43000	129200
299	O	40200	54100	35000	129300
	X	74	19	155	248
000	E				
199 [a]	O				
	X				
TOTAL	E	2753100	4009900	3381100	10143000
	O	2753100	4009900	3381100	10143000
	X	325	105	728	1158

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 64

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000	E	930.10	1225.50	1184.40	3340.00
UP	O	924.00	1181.00	1235.00	3340.00
	X	4	1.62	2.16	3.82
500	E	318.30	419.40	405.30	1143.00
999	O	321.00	461.00	361.00	1143.00
	X	2	4.13	4.84	8.99
300	E	25.30	33.40	32.30	91.00
499	O	33.00	28.00	30.00	91.00
	X	2.34	.87	.16	3.37
200	E	17.30	22.70	22.00	62.00
299	O	13.00	31.00	18.00	62.00
	X	1.12	3.10	.74	4.96
000	E				
199	O				
[a]	X				
TOTAL	E	1291.00	1701.00	1644.00	4636.00
	O	1291.00	1701.00	1644.00	4636.00
	X	3.52	9.72	7.90	21.14

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 65

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Mathematics: Below Average	Average	Above Average	Total
1000	E	1001.20	1546.90	1236.90	3785.00
UP	O	985.00	1511.00	1289.00	3785.00
	X	1.26	.83	2.19	3.28
500	E	229.60	354.70	285.70	868.00
999	O	233.00	379.00	256.00	868.00
	X	.5	1.66	2.70	4.41
300	E	59.80	92.40	73.90	226.10
499	O	65.00	104.00	57.00	226.00
	X	1.12	1.46	5.36	7.94
200	E	17.50	27.00	21.60	66.10
299	O	22.00	27.00	17.00	66.00
	X	1.20	.3	1.01	2.24
000	E				
199 [a]	O				
	X				
TOTAL	E	1308.10	2021.00	1616.10	4945.20
	O	1306.00	2021.00	1616.00	4945.00
	X	2.63	3.98	11.26	17.87

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 66

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART 1), 1951 AND 1950 COMBINED

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
1000	E	1932.80	2767.90	2424.30	7125.00
UP	O	1909.00	2692.00	2524.00	7125.00
	X	1.29	2.08	4.10	6.47
500	E	545.50	761.20	684.30	2011.00
999	O	554.00	840.00	617.00	2011.00
	X	1.13	4.43	6.62	11.18
300	E	86.00	123.10	107.90	317.00
499	O	101.00	132.00	84.00	317.00
	X	2.62	.64	5.29	8.55
200	E	34.70	49.70	43.60	128.00
299	O	35.00	58.00	35.00	128.00
	X	.5	1.40	1.72	3.17
000	E				
199 [a]	O				
	X				
TOTAL	E	2599.00	3721.90	3260.10	9581.00
	O	2599.00	3722.00	3260.00	9581.00
	X	3.09	8.55	17.73	29.37

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 67

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in English: Below Average	Average	Above Average	Total
1000	E	3200	43320	10848[0]	155000
UP	O	2800	42900	10930[0]	155000
	X	50	4	6	60
500	E	860	11930	2989[0]	42700
999	O	1200	11900	2960[0]	42700
	X	116		3	119
300	E	80	1030	259[0]	3700
499	O	100	1300	230[0]	3700
	X	5	71	33	109
200	E	50	610	154[0]	2200
299	O	100	800	130[0]	2200
	X	67	64	38	169
000	E				
199[a]	O				
	X				
TOTAL	E	4210	56890	14250[0]	203600
	O	4200	56900	14250[0]	203600
	X	238	139	80	457

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 68

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR HIGH SCHOOLS (PART I), 1950

School Size	b	Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	34.50	358.80	983.70	1377.00
up	O	29.00	360.00	988.00	1377.00
	X	.88	.02	.02	.90
500	E	7.00	72.40	198.60	278.00
999	O	11.00	65.00	202.00	278.00
	X	2.29	.76	.06	3.11
300	E	1.80	18.80	51.40	72.00
499	O	2.00	22.00	48.00	72.00
	X	.02	.55	.23	.80
200	E	.70	7.00	19.30	27.00
299	O	2.00	10.00	15.00	27.00
	X	2.69	1.35	.96	5.00
000	E				
199	[a] O				
	X				
TOTAL	E	44.00	457.00	1253.00	1754.00
	O	44.00	457.00	1253.00	1754.00
	X	5.88	2.66	1.27	9.81

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 69

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951 AND 1950 MERGED

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000	E	6640	79240	206820	292700
UP	O	5700	78900	208100	292700
	X	133	1	8	142
500	E	1600	19090	49820	70510
999	O	2300	18400	49800	70500
	X	306	25		331
300	E	250	2950	7700	10900
499	O	300	3500	7100	10900
	X	10	103	47	160
200	E	110	1330	3460	4900
299	O	300	1800	2800	4900
	X	378	174	127	679
000	E				
199 [a]	O				
	X				
TOTAL	E	8600	102610	267600	379010
	O	8600	102600	267800	379000
	X	827	303	182	1312

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 70

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	35.80	371.40	1136.90	1544.10
up	O	26.00	342.00	1176.00	1544.00
	X	2.68	2.33	1.34	6.35
500	E	9.90	102.50	313.70	426.10
999	O	17.00	125.00	284.00	426.00
	X	5.09	4.94	2.81	12.84
300	E	1.90	8.90	27.20	37.00
499	O	2.00	15.00	20.00	37.00
	X	1.34	4.16	1.91	7.43
200	E	.50	5.30	16.20	22.00
299	O	2.00	6.00	14.00	22.00
	X	4.51	0.17	0.30	4.98
000	E				
199 [a]	O				
	X				
TOTAL	E	47.10	488.10	1494.00	2029.20
	O	47.00	488.00	1494.00	2029.00
	X	13.62	11.62	6.36	31.60

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 71

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Social Studies: Below Average [b]	Average [c]	Above Average	Total
1000	E	28.30	327.70	1023.10	1379.10
UP	O	31.00	315.00	1033.00	1379.00
	X	.26	.49	.10	.85
500	E	5.70	65.80	205.50	277.00
999	O	5.00	61.00	211.00	277.00
	X	.9	.35	.15	.59
300	E	1.50	17.10	53.40	72.00
499	O		31.00	41.00	72.00
	X	1.50	11.30	2.88	15.62
200	E	.60	6.40	20.00	27.00
299	O		10.00	17.00	27.00
	X	.66	2.03	.49	3.18
000	E				
199 [a]	O				
	X				
TOTAL	E	36.10	417.00	1302.00	1755.10
	O	36.00	417.00	1302.00	1755.00
	X	2.51	14.17	3.62	20.30

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 72

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951 AND 1950 MERGED

School Size		Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	64.10	699.10	2159.80	2923.00
UP	O	57.00	657.00	2209.00	2923.00
	X	.79	2.54	1.12	4.45
500	E	15.40	168.10	519.40	702.90
999	O	22.00	186.00	495.00	703.00
	X	2.63	1.91	1.15	5.89
300	E	2.40	26.10	80.50	109.00
499	O	2.00	46.00	61.00	109.00
	X	.7	15.17	4.72	19.96
200	E	1.10	11.70	36.20	49.00
299	O	2.00	16.00	31.00	49.00
	X	.79	1.63	.76	3.18
000	E				
199 [a]	O				
	X				
TOTAL	E	83.00	905.00	2795.90	3763.90
	O	83.00	905.00	2796.00	3784.00
	X	4.46	21.25	7.75	33.48

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 73

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	86[c]60	460[c]40	986[c]00	1533[c]00
	O	8900	46000	98400	153300
	X	7			7
500 999	E	24[c]10	127[c]90	274[c]00	426[c]00
	O	1600	13100	27900	42600
	X	272	6	9	289
300 499	E	2[c]10	11[c]10	23[c]60	37[c]00
	O	100	700	2900	3700
	X	58	151	114	323
200 299	E	120	660	1420	2200
	O	800	800	600	2200
	X	36[c]56	31	481	4368
000 199 [a]	E				
	O				
	X				
TOTAL	E	11400	60600	129800	201800
	O	11400	60600	129800	201800
	X	4193	190	604	4987

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 74

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP	E	51.10	435.20	894.70	1381.00
	O	60.00	436.00	885.00	1381.00
	X	1.55		11	1.66
500 999	E	10.30	87.60	180.10	278.00
	O	3.00	83.00	192.00	278.00
	X	5.17	24	79	6.20
300 499	E	2.70	22.70	46.60	72.00
	O	2.00	24.00	46.00	72.00
	X	18	7	1	26
200 299	E	1.00	8.50	17.50	27.00
	O		11.00	16.00	27.00
	X	1.02	74	18	1.94
000 199 [a]	E				
	O				
	X				
TOTAL	E	65.10	554.00	1138.90	1758.00
	O	65.00	554.00	1139.00	1758.00
	X	7.92	1.05	1.09	10.06

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-squares. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 75

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SEVEN HIGH SCHOOLS (PART I), 1951 AND 1950 COMBINED

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	138.10	895.20	1880.70	2914.00
UP	O	149.00	896.00	1869.00	2914.00
	X	0.86	0.00	0.07	0.93
500	E	33.40	216.30	454.40	704.10
999	O	19.00	214.00	471.00	704.00
	X	6.21	0.02	0.61	6.84
300	E	5.20	33.50	70.30	109.00
499	O	3.00	31.00	75.00	109.00
	X	0.93	0.19	0.31	1.43
200	E	2.30	15.10	31.60	49.00
299	O	8.00	19.00	22.00	49.00
	X	14.14	1.02	2.98	18.14
000	E				
199 [a]	O				
	X				
TOTAL	E	179.00	1160.10	2437.00	3776.10
	O	179.00	1160.00	2437.00	3776.00
	X	22.14	1.23	3.97	27.34

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 76

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	9470	39970	91560	141000
	O	10500	39000	91500	141000
	X	112	24		136
500 999	E	2430	10260	23510	36200
	O	1500	10900	23800	36200
	X	356	40	4	400
300 499	E	250	1050	2400	3700
	O	200	1100	2400	3700
	X	10	2		12
200 299	E	150	620	1430	2200
	O	100	900	1200	2200
	X	20	129	38	187
000 199	E	[a]			
	O				
	X				
TOTAL	E	12300	51900	118900	183100
	O	12300	51900	118900	183100
	X	498	195	42	735

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 77

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
1000 UP	E	73.20	433.50	873.30	1380.00
	O	70.00	426.00	884.00	1380.00
	X	.14	.13	.13	.40
500 999	E	14.60	86.70	174.70	276.00
	O	16.00	86.00	174.00	276.00
	X	.13	.01		.14
300 499	E	3.80	22.30	44.90	71.00
	O	5.00	28.00	38.00	71.00
	X	.38	1.46	1.06	2.90
200 299	E	1.40	8.50	17.10	27.00
	O	2.00	11.00	14.00	27.00
	X	.27	.77	.58	1.62
000 199	[a] E				
	O				
	X				
TOTAL	E	93.00	551.00	1110.00	1754.00
	O	93.00	551.00	1110.00	1754.00
	X	.92	2.37	1.77	5.06

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 78

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951 AND 1950 MERGED

School Size	b	Achievement in Mathematics: Below Average	Average	Above Average	Total
1000	E	168.10	832.70	1789.20	2790.00
UP	O	175.00	816.00	1799.00	2790.00
	X	2.8	3.3	5	6.6
500	E	38.40	190.40	409.10	637.90
999	O	31.00	195.00	412.00	638.00
	X	1.43	1.1	2	1.56
300	E	6.50	32.20	69.30	108.00
499	O	7.00	39.00	62.00	108.00
	X	4	1.44	77	2.25
200	E	3.00	14.60	31.40	49.00
299	O	3.00	20.00	26.00	49.00
	X	2	2.05	.98	3.05
000	E				
199	O				
	X				
TOTAL	E	216.00	1069.90	2299.00	3584.90
	O	216.00	1070.00	2299.00	3585.00
	X	1.77	3.93	1.82	7.52

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 79

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000 UP	E	332.70	826.40	312.90	1474.00
	O	313.00	847.00	314.00	1474.00
	X	1.17	.42		1.59
500 999	E	106.30	264.70	100.00	471.00
	O	121.00	247.00	103.00	471.00
	X	2.03	1.18	.9	3.30
300 499	E	74.0	185.0	70.0	329.0
	O	72.00	182.00	75.00	329.00
	X	.216	.1	.229	.516
200 299	E	65.0	163.0	62.0	290.0
	O	70.0	160.0	60.0	290.0
	X	.6	.2	.1	.9
000 199 [a]	E				
	O				
	X				
TOTAL	E	452.90	1127.90	428.10	2008.90
	O	453.00	1126.00	426.00	2007.00
	X	.612	.163	.239	1.014

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 80

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in English			
		Below Average c	Average	Above Average	Total
1000 UP	E	277.40	700.40	398.20	1376.00
	O	232.00	713.00	431.00	1376.00
	X	7.43	.23	2.70	10.36
500 999	E	67.50	70.50	96.90	334.90
	O	98.00	153.00	84.00	335.00
	X	13.78	1.80	1.72	17.30
300 499	E	19.00	47.80	27.20	94.00
	O	33.00	48.00	13.00	94.00
	X	10.32		7.41	17.73
200 299	E	6.00	15.30	8.70	30.00
	O	7.00	20.00	3.00	30.00
	X	.18	1.45	3.74	5.37
000 199 [a]	E				
	O				
	X				
TOTAL	E	369.90	934.00	531.00	1834.90
	O	370.00	934.00	531.00	1835.00
	X	32.71	3.48	15.57	50.76

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 81

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I) 1951 AND 1950 COMBINED

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	610.50	1529.60	709.90	2850.00
UP	O	545.00	1560.00	745.00	2850.00
	X	7.03	.60	1.74	9.37
500	E	172.70	432.60	200.80	806.10
999	O	219.00	400.00	187.00	806.00
	X	12.41	2.46	.95	15.82
300	E	27.20	68.20	31.60	127.00
499	O	45.00	66.00	16.00	127.00
	X	11.65	.7	7.70	19.42
200	E	12.60	31.70	14.70	59.00
299	O	14.00	36.00	9.00	59.00
	X	.16	.60	2.21	2.97
000 & [a]	E				
199	O				
	X				
TOTAL	E	823.00	2062.10	957.00	3842.10
	O	823.00	2062.00	957.00	3842.00
	X	31.25	3.73	1.60	4.758

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 82

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000 UP	E	344.90	660.70	260.50	1466.10
	O	336.00	858.00	272.00	1466.00
	X	.23	1	.51	.75
500 999	E	110.60	275.90	63.50	470.00
	O	113.00	281.00	76.00	470.00
	X	.5	.9	1.67	1.61
300 499	E	7.80	19.40	5.90	33.10
	O	11.00	18.00	4.00	33.00
	X	1.31	.10	.61	2.02
200 299	E	6.80	17.00	5.20	29.00
	O	10.00	16.00	3.00	29.00
	X	1.54	.10	.98	2.62
000 199[a]	E				
	O				
	X				
TOTAL	E	470.10	1173.00	355.10	1996.20
	O	470.00	1173.00	355.00	1996.00
	X	3.13	.30	2.77	6.20

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 83

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART 1), 1950

School Size	b	Achievement in Social Studies: Below Average c	Average	Above Average	Total
1000	E	275.10	738.30	360.60	1374.00
UP	O	243.00	756.00	375.00	1374.00
	X	3.75	.42	.58	4.75
500	E	67.10	180.00	87.90	335.00
999	O	76.00	168.00	91.00	335.00
	X	1.18	.80	.11	2.09
300	E	18.80	50.50	24.70	94.00
499	O	34.00	49.00	11.00	94.00
	X	12.29	.04	7.60	19.93
200	E	6.00	16.10	7.90	30.00
299	O	14.00	12.00	4.00	30.00
	X	10.69	1.08	1.97	13.74
000	E				
199 [a]	O				
	X				
TOTAL	E	367.00	984.90	481.10	1833.00
	O	367.00	985.00	481.00	1833.00
	X	27.91	2.54	10.26	40.51

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE A4

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I) 1951 AND 1950 MERGED

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000	E	62050	159960	61970	284000
UP	O	57900	161400	84700	284000
	X	278	13	120	411
500	E	17590	45350	17570	80510
999	O	18900	44900	16700	80500
	X	98	4	43	145
300	E	2770	7150	2770	12690
499	O	4500	8700	1500	12700
	X	1081	28	582	1691
200	E	1290	3320	1290	5900
299	O	2400	2800	700	5900
	X	958	83	273	1314
000	E				
199[a]	O				
	X				
TOTAL	E	83700	215800	83600	383100
	O	83700	215800	83600	383100
	X	2415	128	1018	3561

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 85

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	38010	75870	31120	145000
	O	39300	75300	30400	145000
	X	44	4	17	65
500 999	E	12290	24540	10070	46900
	O	10900	24800	11200	46900
	X	157	3	127	287
300 499	E	840	1670	690	3200
	O	700	1800	700	3200
	X	23	10		33
200 299	E	760	1520	620	2900
	O	1000	1700	200	2900
	X	79	25	288	392
000 199	E				
	O				
	X				
TOTAL	E	51900	103600	42500	198000
	O	51900	103600	42500	198000
	X	303	42	432	777

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 86

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCE TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Natural Science: Below Average [c]	Average	Above Average	Total
1000 UP	E	341.80	744.20	281.00	1367.00
	O	334.00	740.00	293.00	1367.00
	X	15	2	51	71
500 999	E	83.30	181.30	68.50	333.10
	O	78.00	181.00	74.00	333.00
	X	34		44	78
300 499	E	23.50	51.20	19.30	94.00
	O	29.00	59.00	6.00	94.00
	X	1.29	1.19	9.17	11.65
200 299	E	7.50	16.30	6.20	30.00
	O	15.00	13.00	2.00	30.00
	X	7.53	.69	2.65	11.07
000 199	[a] E				
	O				
	X				
TOTAL	E	456.10	993.00	375.00	1824.10
	O	456.00	993.00	375.00	1824.00
	X	9.34	1.90	12.97	24.21

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 67

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SEYLON HIGH SCHOOLS (PART I) 1951 AND 1950 COMBINED

School Size		Achievement in Natural Sciences: Below Average [c]	Average	Above Average	Total
1000	E	72200	150250	59240	281690
UP	O	72700	149300	59700	281700
	X	3	6	4	13
500	E	20560	42780	16870	80210
999	O	18700	42900	18600	80200
	X	168		177	345
300	E	3230	6720	2650	12600
499	O	3600	7700	1300	12600
	X	42	143	688	873
200	E	1510	3150	1240	5900
299	O	2500	3000	400	5900
	X	652	8	574	1234
000 [a]	E				
199	O				
	X				
TOTAL	E	97500	202900	80000	380400
	O	97500	202900	80000	380400
	X	865	157	1443	2465

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 86

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	371.30	617.90	291.80	1281.00
UP	O	396.00	605.00	280.00	1281.00
	X	1.64	.27	.48	2.39
500	E	120.00	199.70	94.30	414.00
999	O	94.00	212.00	108.00	414.00
	X	5.63	.76	1.99	8.38
300	E	9.30	15.40	7.30	32.00
499	O	13.00	13.00	6.00	32.00
	X	1.47	.37	.23	2.07
200	E	8.40	14.00	5.60	29.00
299	O	6.00	17.00	6.00	29.00
	X	.72	.64	.8	1.44
000	E				
199 [a]	O				
	X				
TOTAL	E	509.00	847.00	400.00	1756.00
	O	509.00	847.00	400.00	1756.00
	X	9.46	2.04	2.78	14.28

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 89

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	321.80	721.60	325.60	1369.00
UP	O	316.00	707.00	346.00	1369.00
	X	1.10	1.30	1.28	1.68
500	E	78.00	175.00	79.00	332.00
999	O	74.00	188.00	70.00	332.00
	X	1.21	0.97	1.03	2.21
300	E	22.10	49.50	22.40	94.00
499	O	24.00	55.00	15.00	94.00
	X	0.16	0.61	2.44	3.21
200	E	7.10	15.00	7.10	30.00
299	O	15.00	12.00	3.00	30.00
	X	8.79	0.95	2.39	12.13
000 [a]	E				
199	O				
	X				
TOTAL	E	429.00	961.90	434.10	1825.00
	O	429.00	962.00	434.00	1825.00
	X	9.26	2.83	7.14	19.23

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 90

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I)
1951 AND 1950 COMBINED

School Size		Achievement in Mathematics			
	[b]	Below Average [c]	Average	Above Average	Total
1000 UP	E	694.10	1338.70	617.20	2650.00
	O	712.00	1312.00	626.00	2650.00
	X	4.6	5.3	1.3	11.2
500 999	E	195.40	376.90	173.70	746.00
	O	168.00	400.00	178.00	746.00
	X	3.89	1.42	0.11	5.42
300 499	E	33.00	63.70	29.30	126.00
	O	37.00	68.00	21.00	126.00
	X	0.49	0.29	2.35	3.13
200 299	E	15.50	29.80	13.70	59.00
	O	21.00	29.00	9.00	59.00
	X	1.99	0.03	1.65	3.67
000 199	[a] E				
	O				
	X				
TOTAL	E	938.00	1809.10	833.90	3581.00
	O	938.00	1809.00	834.00	3581.00
	X	6.83	2.27	4.24	13.34

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 91

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000	E	514.10	247.60	25.30	787.00
UP	O	505.00	254.00	28.00	787.00
	X	.16	.17	.29	.62
500	E	257.40	124.00	12.70	394.10
999	O	267.00	116.00	11.00	394.00
	X	.36	.52	.23	1.11
300	E	14.40	6.90	.70	22.00
499	O	14.00	8.00		22.00
	X	1	1.18	.70	2.89
200	E	7.20	3.50	.40	11.10
299	O	7.00	4.00		11.00
	X	.5	.41	2.68	3.14
000	E				
199 [a]	O				
	X				
TOTAL	E	793.10	382.00	39.10	1214.20
	O	793.00	382.00	39.00	1214.00
	X	.58	1.28	3.90	5.76

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 92

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	618.90	366.00	53.20	1038.10
	O	610.00	373.00	55.00	1038.00
	X	1.3	1.3	.6	3.2
500 999	E	154.40	91.30	13.30	259.00
	O	152.00	94.00	13.00	259.00
	X	4	.8	1	1.3
300 499	E	36.40	21.50	3.10	61.00
	O	46.00	13.00	2.00	61.00
	X	2.53	3.36	.39	6.28
200 299	E	5.40	3.20	.50	9.10
	O	7.00	2.00		9.00
	X	1.52	.62	2.27	3.41
000 199 [a]	E				
	O				
	X				
TOTAL	E	815.10	482.00	70.10	1367.20
	O	815.00	482.00	70.00	1367.00
	X	3.22	4.19	2.73	10.14

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 93

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I) 1951 AND 1950 MERGED

School Size		Achievement in English			
		Below Average [b] [c]	Average	Above Average	Total
1000 UP	E	113700	61090	7710	182500
	O	111500	62700	8300	182500
	X	43	42	45	130
500 999	E	40680	21860	2760	65300
	O	41900	21000	2400	65300
	X	37	34	47	118
300 499	E	5170	2780	350	8300
	O	6000	2100	200	8300
	X	133	166	64	363
200 299	E	1250	670	80	2000
	O	1400	600		2000
	X	21	30	214	265
000 199 [a]	E				
	O				
	X				
TOTAL	E	160800	86400	10900	258100
	O	160800	86400	10900	258100
	X	234	272	370	876

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 94

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	540.00	223.50	15.50	779.00
	O	526.00	235.00	18.00	779.00
	X	3.6	5.9	4.0	13.5
500 999	E	273.10	113.00	7.80	393.90
	O	280.00	109.00	5.00	394.00
	X	1.7	1.4	1.01	1.32
300 499	E	153.0	63.0	4.0	220.0
	O	200.0	10.0	10.0	220.0
	X	14.4	44.6	9.0	68.0
200 299	E	76.0	32.0	2.0	110.0
	O	100.0	10.0		110.0
	X	7.7	15.5	2.6	25.8
000 199	E				
	O				
	X				
TOTAL	E	836.00	346.00	23.90	1205.90
	O	836.00	346.00	24.00	1206.00
	X	2.74	6.74	2.57	12.05

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 55

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1950

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000 UP	E	676.90	3229.90	371.10	1037.90
	O	663.00	3388.00	360.00	1037.00
	X	29	71	3	103
500 999	E	169.70	810.00	93.30	260.00
	O	172.00	760.00	129.00	260.00
	X	3	31	7.8	1.12
300 499	E	40.50	193.00	22.20	62.00
	O	52.00	91.00	10.00	62.00
	X	3.27	55.0	6.5	9.42
200 299	E	5.90	28.0	3.0	9.00
	O	6.00	3.00		9.00
	X	1	3	32	36
000 199 [a]	E				
	O				
	X				
TOTAL	E	893.00	4260.00	489.0	1367.90
	O	893.00	4260.00	490.00	1368.00
	X	3.60	6.55	1.78	11.93

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 96

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951 AND 1950 COMBINED

School Size		Achievement in Social Studies			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP	E	121980	54470	51150	181600
	O	118900	57300	54400	181600
	X	78	147	12	237
500 599	E	43930	19610	18850	65390
	O	45200	18500	17700	65400
	X	37	63	12	112
300 499	E	5640	2520	2440	8400
	O	7200	1000	200	8400
	X	431	917	7	1355
200 299	E	1340	600	60	2000
	O	1600	400		2000
	X	51	71	69	191
000 199 [a]	E				
	O				
	X				
TOTAL	E	172890	77200	73000	257090
	O	172900	77200	73000	257400
	X	597	1198	100	1895

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 97

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size		Achievement in Natural Sciences: Below Average [b]	Average	Above Average	Total
1000	E	479.80	258.60	31.60	770.00
UP	O	483.00	255.00	32.00	770.00
	X	.02	.05	.10	.08
500	E	244.30	131.70	16.10	392.10
999	O	239.00	138.00	15.00	392.00
	X	.12	.30	.83	.50
300	E	13.10	7.10	.90	21.10
499	O	15.00	5.00	1.00	21.00
	X	.28	.62	.11	.91
200	E	6.90	3.70	.50	11.10
299	O	7.00	3.00	1.00	11.00
	X	.01	.14	.51	.66
000	E				
199 [a]	O				
	X				
TOTAL	E	744.10	401.10	49.10	1194.30
	O	744.00	401.00	49.00	1194.00
	X	.43	1.11	.61	2.15

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 98

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART 1), 1950

School Size		Achievement in Natural Sciences: Below Average	Average	Above Average	Total
1000	E	67.850	31.920	46.130	103.900
UP	O	68.100	31.000	47.000	103.100
	X	.11	.27	1	.39
500	E	16.850	8.000	11.160	26.010
999	O	15.600	9.000	14.000	26.000
	X	.93	1.25	.50	2.68
300	E	4.020	1.910	2.680	6.210
499	O	4.400	1.800		6.200
	X	.36	.6	2.680	3.22
200	E	5.880	2.780	.440	9.100
299	O	6.00	3.00		9.00
	X	.7	.5	.46	.58
000	E				
199[a]	O				
	X				
TOTAL	E	88.700	42.110	61.110	136.920
	O	88.700	42.100	61.000	136.900
	X	1.47	1.63	3.77	6.87

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 99

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN MERLOW HIGH SCHOOLS (PART I) 1951 AND 1950 COMBINED

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	1150.50	579.90	77.60	1808.00
	O	1164.00	565.00	79.00	1809.00
	X	16.38	1.71	3.57	
500 999	E	414.90	209.10	28.00	652.00
	O	395.00	228.00	29.00	652.00
	X	1.95	1.71	4.27	
300 499	E	52.80	26.60	3.60	83.00
	O	59.00	23.00	1.00	83.00
	X	1.73	0.49	1.88	3.10
200 299	E	12.70	6.40	.90	20.00
	O	13.00	6.00	1.00	20.00
	X	.08	.06	.05	.19
000 199 [a]	E				
	O				
	X				
TOTAL	E	1630.90	822.00	110.10	2563.00
	O	1631.00	822.00	110.00	2563.00
	X	1.92	2.64	2.00	6.56

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 100

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I), 1951

School Size	b	Achievement in Mathematics: Below Average c	Average	Above Average	Total
1000	E	407.70	207.30	34.00	649.00
UP	O	423.00	186.00	40.00	649.00
	X	.57	2.19	1.06	3.82
500	E	230.60	117.20	19.20	367.00
999	O	212.00	140.00	15.00	367.00
	X	1.50	4.44	.92	6.86
300	E	13.80	7.00	1.20	22.00
499	O	18.00	4.00		22.00
	X	1.28	1.29	1.20	3.77
200	E	6.90	3.50	.60	11.00
299	O	6.00	5.00		11.00
	X	.14	.67	.61	1.42
000	E				
199[a]	O				
	X				
TOTAL	E	659.00	335.00	55.00	1049.00
	O	659.00	335.00	55.00	1049.00
	X	3.49	8.59	3.79	15.87

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 101

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART 1), 1950

School Size		Achievement in Mathematics			
		Below Average [b] [c]	Average	Above Average	Total
1000 UP	E	596.10	385.30	54.60	1036.00
	O	599.00	378.00	59.00	1036.00
	X	1	14	35	50
500 999	E	149.60	96.70	13.70	260.00
	O	143.00	105.00	12.00	260.00
	X	29	71	21	121
300 499	E	35.10	22.70	3.20	61.00
	O	39.00	21.00	1.00	61.00
	X	43	13	1.51	207
200 299	E	5.20	3.30	.50	9.00
	O	5.00	4.00		9.00
	X	8	17	.57	82
000 [a] 199	E				
	O				
	X				
TOTAL	E	786.00	508.00	72.00	1366.00
	O	786.00	508.00	72.00	1366.00
	X	81	1.15	2.54	460

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 102

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART I) 1951 AND 1950 RECORD

School Size		Achievement in Mathematics			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP	E	1006.20	588.20	86.60	1680.00
	O	1022.00	564.00	94.00	1680.00
	X	0.19	1.00	1.22	2.41
500 999	E	375.20	218.90	33.00	627.10
	O	355.00	245.00	27.00	627.00
	X	1.09	3.11	1.09	5.29
300 499	E	49.70	29.00	4.40	83.10
	O	57.00	25.00	1.00	83.00
	X	1.07	.55	2.63	4.25
200 299	E	12.00	7.00	1.10	20.10
	O	11.00	9.00		20.00
	X	.14	.65	1.14	1.93
000 199 [a]	E				
	O				
	X				
TOTAL	E	1445.10	843.10	127.10	2415.30
	O	1445.00	843.00	127.00	2415.00
	X	2.49	5.31	6.08	13.88

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 103

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Psychological Categories: Below Average [b]	Average	Above Average	Total
2000	E	545.40	902.60	915.60	2364.00
UP	O	435.00	867.00	1062.00	2364.00
	X	22.35	1.42	23.34	47.11
1500	E	296.70	491.10	498.20	1286.00
1999	O	324.00	545.00	417.00	1286.00
	X	2.51	5.92	13.24	21.67
750	E	213.00	352.50	357.60	923.10
1499	O	261.00	342.00	320.00	923.00
	X	10.82	.31	3.95	15.08
500	E	124.40	205.80	208.80	539.00
749	O	162.00	195.00	182.00	539.00
	X	11.36	.57	3.44	15.37
000	E	35.50	58.80	59.70	154.00
499	O	33.00	62.00	59.00	154.00
	X	.18	.18	1	.37
TOTAL	E	1215.00	2011.00	2040.10	5266.10
	O	1215.00	2011.00	2040.00	5266.00
	X	47.22	8.40	43.98	99.60

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 104

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL JUNIORS IN SENIOR HIGH SCHOOLS (PART II)
1950

School Size		Psychological Categories: Below Average	Average	Above Average	Total
2000	E	467.80	625.80	595.30	1691.90
UP	O	449.00	613.00	630.00	1692.00
	X	1.76	.26	1.68	2.70
1500	E	377.70	505.30	483.00	1366.00
1999	O	371.00	478.00	517.00	1366.00
	X	.12	1.48	2.39	3.99
750	E	305.50	408.70	390.70	1104.90
1499	O	315.00	417.00	373.00	1105.00
	X	.30	.17	.80	1.27
500	E	144.60	193.40	184.90	522.90
749	O	171.00	210.00	142.00	523.00
	X	4.82	1.43	9.95	16.20
000	E	81.30	108.70	104.00	294.00
499	O	71.00	124.00	99.00	294.00
	X	1.31	2.15	.24	3.70
TOTAL	E	1376.90	1841.90	1760.90	4979.70
	O	1377.00	1842.00	1761.00	4980.00
	X	7.31	5.49	15.06	27.86

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 105

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II)
1951 AND 1950 COMBINED

School Size		Psychological Categories: Below Average	Average	Above Average	Total
2000	E	1026.10	1525.30	1504.70	4056.10
UP	O	884.00	1460.00	1692.00	4056.00
	X	19.68	1.35	23.31	44.34
1500	E	670.90	997.30	983.80	2652.00
1999	O	695.00	1023.00	934.00	2652.00
	X	.67	.66	2.52	4.05
750	E	513.00	762.60	752.30	2027.90
1499	O	576.00	759.00	693.00	2028.00
	X	7.74	.02	4.67	12.43
500	E	268.70	399.40	394.00	1062.10
749	O	333.00	405.00	324.00	1062.00
	X	15.39	.18	12.44	27.91
000	E	113.30	168.50	166.20	448.00
499	O	104.00	186.00	158.00	448.00
	X	.76	1.82	.41	2.99
TOTAL	E	2592.00	3853.10	3801.00	10246.10
	O	2592.00	3853.00	3801.00	10246.00
	X	44.44	.03	43.35	91.72

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 206

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size	[b]	Achievement in English: Below Average [c]	Average	Above Average	Total
2000	E	577.00	931.30	846.70	2355.00
UP	O	503.00	928.00	924.00	2355.00
	X	9.49	1	7.06	16.56
1500	E	315.10	508.60	462.30	1286.00
1999	O	311.00	532.00	443.00	1286.00
	X	5	1.08	1.81	1.94
750	E	226.10	365.00	331.80	922.90
1499	O	246.00	347.00	330.00	923.00
	X	1.75	1.89	1	2.65
500	E	132.10	213.20	193.80	539.10
749	O	186.00	205.00	148.00	539.00
	X	21.99	1.32	10.82	33.13
000	E	37.70	60.90	55.40	154.00
499	O	42.00	67.00	45.00	154.00
	X	.50	.61	1.96	3.07
TOTAL	E	1288.00	2079.00	1890.00	5257.00
	O	1288.00	2079.00	1890.00	5257.00
	X	33.78	2.91	20.66	57.35

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 107

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
2000	E	417.10	635.70	629.20	1682.00
UP	O	390.00	649.00	643.00	1682.00
	X	1.76	.28	.30	2.34
1500	E	338.50	515.90	510.60	1365.00
1999	O	303.00	520.00	542.00	1365.00
	X	3.72	.03	1.93	5.68
750	E	271.30	413.50	409.30	1094.10
1499	O	257.00	392.00	445.00	1094.00
	X	.75	1.12	3.11	4.98
500	E	129.40	197.30	195.30	522.00
749	O	182.00	197.00	143.00	522.00
	X	21.38		14.01	35.39
000	E	72.70	110.70	109.60	293.00
499	O	97.00	115.00	81.00	293.00
	X	8.43	.07	7.46	15.96
TOTAL	E	1229.00	1873.10	1854.00	4956.10
	O	1229.00	1873.00	1854.00	4956.00
	X	35.74	1.60	26.81	64.15

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 108

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II)
1951 AND 1950 COMBINED

School Size	[b]	Achievement in English: Below Average [c]	Average	Above Average	Total
2000	E	99490	156210	147990	403690
UP	O	89300	157700	156700	403700
	X	10044	14	513	1571
1500	E	65330	102580	97180	265090
1999	O	61400	105200	98500	265100
	X	236	67	18	321
750	E	49710	78050	73940	201700
1499	O	50300	73900	77500	201700
	X	7	221	171	399
500	E	26150	41060	38900	106110
749	O	36800	40200	29100	106100
	X	4337	18	2469	6824
000	E	11020	17300	16390	44710
499	O	13500	18200	12600	44700
	X	753	47	877	1677
TOTAL	E	251700	395200	374400	1021300
	O	251700	395200	374400	1021300
	X	6377	367	4048	10792

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 109

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
2000	E	604.00	895.90	836.10	2336.00
UP	O	510.00	656.00	970.00	2336.00
	X	14.63	1.78	21.44	37.85
1500	E	331.70	492.10	459.20	1283.00
1999	O	338.00	517.00	428.00	1283.00
	X	.12	1.26	2.12	3.50
750	E	238.10	353.20	329.60	920.90
1499	O	274.00	351.00	296.00	921.00
	X	5.41	.01	3.43	8.85
500	E	139.40	206.70	192.90	539.00
749	O	176.00	226.00	137.00	539.00
	X	9.61	1.80	16.20	27.61
000	E	39.20	59.10	55.10	154.00
499	O	55.00	57.00	42.00	154.00
	X	5.82	.39	3.12	9.03
TOTAL	E	1353.00	2007.00	1872.90	5232.90
	O	1353.00	2007.00	1873.00	5233.00
	X	35.69	4.94	46.31	86.84

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 119

SCATTERSHOT DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size	[b]	Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
2000	E	439 60	620 00	621 40	1681 00
UP	O	386 00	586 00	709 00	1681 00
	X	6 54	1 66	12 35	20 75
1500	E	356 70	503 10	504 20	1364 00
1999	O	366 00	532 00	466 00	1364 00
	X	0 24	1 66	2 89	4 79
750	E	286 30	403 90	404 80	1095 00
1499	O	264 00	425 00	406 00	1095 00
	X	1 74	1 10		2 84
500	E	136 50	192 50	193 00	522 00
749	O	174 00	171 00	177 00	522 00
	X	10 30	2 40	1 33	14 03
000	E	76 90	108 40	108 70	294 00
499	O	106 00	114 00	74 00	294 00
	X	11 01	29	11 08	22 38
TOTAL	E	1296 00	1827 90	1832 10	4956 00
	O	1296 00	1828 00	1832 00	4956 00
	X	29 83	7 31	27 65	64 79

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE III

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II)
1951 AND 1950 COMBINED

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
2000	E	104440	151190	146070	401700
UP	O	89600	144200	167900	401700
	X	2109	323	3263	5695
1500	E	68820	99630	96250	264700
1999	O	70400	104900	89400	264700
	X	36	279	488	803
750	E	52410	75880	73310	201600
1499	O	53800	77600	70200	201600
	X	37	39	132	208
500	E	27580	39930	38580	106090
749	O	35000	39700	31400	106100
	X	1996	1	1336	3333
000	E	11650	16860	16290	44800
499	O	16100	17100	11600	44800
	X	1700	4	1351	3055
TOTAL	E	2649[b][c]00	383490	3705[b]00	10188[b]90
	O	2649[b]00	383500	3705[b]00	10189[b]00
	X	5678	646	6570	13094

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 112

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCE TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
2000 UP	E	596.90	906.90	804.20	2312.00
	O	531.00	895.00	886.00	2312.00
	X	7.70	.21	8.32	16.23
1500 1999	E	329.30	495.60	442.10	1271.00
	O	365.00	493.00	413.00	1271.00
	X	3.87	.9	1.92	5.88
750 1499	E	238.30	361.70	320.00	920.00
	O	242.00	382.00	296.00	920.00
	X	.6	1.14	1.80	3.00
500 749	E	138.90	210.70	186.40	536.00
	O	165.00	214.00	157.00	536.00
	X	4.90	.5	4.64	9.59
000 499	E	39.60	60.10	53.20	152.90
	O	42.00	57.00	54.00	153.00
	X	.15	.16	.3	.34
TOTAL	E	1345.00	2041.00	1805.90	5191.90
	O	1345.00	2041.00	1806.00	5192.00
	X	16.68	1.65	16.71	35.04

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 113

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SEMIORS IN SENIOR HIGH SCHOOLS (PART II), 1930

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average [c]	Above Average	Total
2000	E	476.90	666.60	533.50	1677.00
UP	O	468.00	663.00	546.00	1677.00
	X	1.17	.02	.29	1.48
1500	E	386.80	540.60	432.60	1360.00
1999	O	402.00	535.00	417.00	1360.00
	X	1.16	.06	.56	1.78
750	E	312.30	436.40	349.30	1098.00
1499	O	270.00	424.00	404.00	1098.00
	X	5.73	.35	8.57	14.65
500	E	148.50	207.50	166.10	522.10
749	O	166.00	218.00	138.00	522.00
	X	2.06	.53	4.75	7.34
000	E	83.60	116.90	93.50	294.00
499	O	96.00	128.00	70.00	294.00
	X	1.84	1.06	5.91	8.81
TOTAL	E	1408.10	1968.00	1575.00	4951.10
	O	1408.00	1968.00	1575.00	4951.00
	X	1.096	.002	.008	.3306

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-squares. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 114

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II)
1951 AND 1950 MERGED

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
2000	E	1082.70	1576.60	1329.70	3989.00
UP	O	999.00	1556.00	1432.00	3969.00
	X	6.47	.22	7.87	14.56
1500	E	714.10	1039.90	877.00	2631.00
1999	O	773.00	1028.00	830.00	2631.00
	X	4.86	.14	2.52	7.52
750	E	547.70	797.60	672.70	2018.00
1499	O	512.00	806.00	700.00	2018.00
	X	2.33	.9	1.11	3.53
500	E	287.20	416.20	352.70	1056.10
749	O	331.00	432.00	295.00	1058.00
	X	6.68	.46	9.44	16.58
000	E	121.30	176.70	149.00	447.00
499	O	136.00	185.00	124.00	447.00
	X	2.30	.39	4.20	6.89
TOTAL	E	2753.00	4009.00	3381.10	10143.10
	O	2753.00	4009.00	3381.00	10143.00
	X	22.64	1.30	25.14	49.08

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 119

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
2000	E	529.70	697.90	674.50	1902.10
UP	O	499.00	683.00	720.00	1902.00
	X	1.76	.32	3.07	5.17
1500	E	353.10	465.20	449.70	1268.00
1999	O	382.00	435.00	451.00	1266.00
	X	2.37	1.96		4.33
750	E	256.50	337.90	326.60	921.00
1499	O	246.00	364.00	311.00	921.00
	X	.43	2.02	.75	3.20
500	E	109.20	143.80	139.00	392.00
749	O	118.00	160.00	114.00	392.00
	X	.71	1.63	4.50	7.04
000	E	42.60	56.10	54.30	153.00
499	O	46.00	59.00	46.00	153.00
	X	.26	.17	.74	1.19
TOTAL	E	1291.10	1700.90	1644.10	4636.10
	O	1291.00	1701.00	1644.00	4636.00
	X	5.57	6.30	9.06	20.93

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 114

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
2000	E	444.40	686.60	549.00	1680.00
UP	O	462.00	657.00	541.00	1680.00
	X	3.18	1.28	0.12	4.58
1500	E	359.50	555.40	444.10	1359.00
1999	O	341.00	528.00	490.00	1359.00
	X	0.95	1.35	4.74	7.04
750	E	288.80	446.30	356.90	1092.00
1499	O	230.00	483.00	379.00	1092.00
	X	11.97	3.02	1.37	16.36
500	E	138.10	213.30	170.60	522.00
749	O	165.00	222.00	135.00	522.00
	X	5.24	0.36	7.43	13.03
000	E	77.20	119.30	95.40	291.90
499	O	90.00	131.00	71.00	292.00
	X	2.13	1.15	6.24	9.52
TOTAL	E	1308.00	2020.90	1616.00	4944.90
	O	1308.00	2021.00	1616.00	4945.00
	X	23.47	7.16	19.90	50.53

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 117

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 NORMS

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
2000	E	971.70	1391.50	1218.80	3582.00
UP	O	981.00	1340.00	1261.00	3582.00
	X	9	1.91	1.46	3.46
1500	E	712.60	1020.50	893.90	2627.00
1999	O	723.00	963.00	941.00	2627.00
	X	1.15	3.24	2.48	5.87
750	E	546.10	782.00	684.90	2013.00
1499	O	476.00	847.00	690.00	2013.00
	X	9.00	5.40	.4	14.44
500	E	247.90	355.10	311.00	914.00
749	O	283.00	382.00	249.00	914.00
	X	4.97	2.04	12.36	19.37
000	E	120.70	172.90	151.40	445.00
499	O	136.00	190.00	119.00	445.00
	X	1.95	1.70	6.93	10.58
TOTAL	E	2599.00	3722.00	3260.00	9581.00
	O	2599.00	3722.00	3260.00	9581.00
	X	16.16	14.29	23.27	53.72

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 11E

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size	[b]	Achievement in English: Below Average	Average	Above Average	Total
2000	E	21.80	29.70	74.50	105.00
UP	O	24.00	29.00	73.00	105.00
	X	.22	.03	1.13	.23
1500	E	8.60	11.60	29.80	41.00
1999	O	4.00	11.00	30.00	41.00
	X	2.46	.36	.42	3.24
750	E	6.60	8.90	22.40	32.00
1499	O	5.00	8.00	23.00	32.00
	X	.39	.01	.36	1.36
500	E	3.80	5.00	12.70	18.10
749	O	7.00	6.00	11.00	18.00
	X	2.69	1.63	1.21	5.53
000	E	1.20	1.60	4.10	5.90
499	O	2.00	2.00	3.00	5.90
	X	.65	1.24	.68	2.57
TOTAL	E	42.00	56.00	142.50	203.10
	O	42.00	56.00	142.50	203.00
	X	6.41	3.84	2.68	12.93

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 119

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1930

School Size	b	Achievement in English: Below Average c	Average	Above Average	Total
2000	E	15.70	163.40	447.90	627.00
UP	O	14.00	170.00	443.00	627.00
	X	.18	.27	.05	.50
1500	E	13.00	134.70	369.30	517.00
1999	O	6.00	133.00	378.00	517.00
	X	3.77	.02	.21	4.00
750	E	9.30	96.10	263.60	369.00
1499	O	12.00	82.00	275.00	369.00
	X	.78	2.07	.49	3.34
500	E	3.60	37.00	101.40	142.00
749	O	8.00	40.00	94.00	142.00
	X	5.38	.24	.54	6.16
000	E	2.50	25.80	70.70	99.00
499	O	4.00	32.00	63.00	99.00
	X	.93	1.49	.84	3.26
TOTAL	E	44.10	457.00	1252.90	1754.00
	O	44.00	457.00	1253.00	1754.00
	X	11.04	4.09	2.13	17.26

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 120

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR BOYS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 COMBINED

School Size		Achievement in English: Below Average	Average	Above Average	Total
2000	E	38[2]0	45[8]10	119[0]60	1684[9]0
Up	O	38[0]0	46[6]00	1181[0]0	1685[0]0
	X		[2]2	[8]	[3]0
1500	E	21[2]0	25[2]80	66[0]00	934[0]0
1999	O	10[0]0	24[3]00	66[1]00	934[0]0
	X	5[9]2	[3]8	[6]7	69[7]
750	E	15[6]0	18[6]50	48[6]80	68[9]0
1499	O	17[0]0	16[4]00	50[8]00	68[9]0
	X	[1]3	[2]71	[1]92	[3]76
500	E	7[4]0	8[7]70	22[8]90	324[0]0
749	O	15[0]0	10[0]00	209[0]0	324[0]0
	X	7[8]1	[1]73	[1]73	[1]127
000	E	3[6]0	4[2]80	11[1]60	15[8]00
499	O	6[0]0	5[3]00	99[0]0	15[8]00
	X	[1]68	[2]43	[1]42	[5]53
TOTAL	E	86[0]0	102[5]90	267[7]90	3789[8]0
	O	86[0]0	102[6]00	267[8]00	3790[0]0
	X	[1]5[5]4	[7]47	[4]82	[2]783

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 121

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
2000	E	24[40]	253[00]	77[460]	1052[00]
UP	O	17[00]	236[00]	799[00]	1052[00]
	X	2[24]	1[14]	[77]	4[15]
1500	E	9[70]	100[30]	30[700]	417[00]
1999	O	7[00]	88[00]	322[00]	417[00]
	X	[75]	1[51]	[73]	2[99]
750	E	7[40]	77[00]	235[60]	320[00]
1499	O	11[00]	76[00]	233[00]	320[00]
	X	1[75]	1	3	1[79]
500	E	4[20]	43[50]	133[30]	181[00]
749	O	8[00]	67[00]	106[00]	181[00]
	X	3[44]	12[70]	5[59]	21[73]
000	E	1[40]	14[20]	43[40]	59[00]
499	O	4[00]	21[00]	34[00]	59[00]
	X	4[83]	3[26]	2[05]	10[14]
TOTAL	E	47[10]	488[00]	1493[90]	2029[00]
	O	47[00]	488[00]	1494[00]	2029[00]
	X	13[01]	18[62]	9[17]	40[80]

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 122

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
2000	E	12[c]90	149[c]20	465[c]90	628[c]00
UP	O	7[c]00	121[c]00	500[c]00	628[c]00
	X	2[c]70	5[c]33	2[c]50	10[c]53
1500	E	10[c]60	123[c]10	384[c]30	518[c]00
1999	O	17[c]00	135[c]00	366[c]00	518[c]00
	X	3[c]86	1[c]15	[c]87	5[c]88
750	E	7[c]60	87[c]70	273[c]80	369[c]10
1499	O	10[c]00	88[c]00	271[c]00	369[c]00
	X	[c]76		3	[c]79
500	E	2[c]90	33[c]50	104[c]60	141[c]00
749	O	2[c]00	32[c]00	107[c]00	141[c]00
	X	[c]28	[c]7	6	[c]41
000	E	2[c]00	23[c]50	73[c]40	98[c]90
499	O		41[c]00	58[c]00	99[c]00
	X	2[c]01	13[c]03	3[c]24	18[c]28
TOTAL	E	36[c]00	417[c]00	1302[c]00	1755[c]00
	O	36[c]00	417[c]00	1302[c]00	1755[c]00
	X	9[c]61	19[c]58	6[c]70	35[c]89

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 123

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 MERGED

School Size		Achievement in Social Studies			
		Below Average [b] [c]	Average	Above Average	Total
2000 UP	E	36.80	401.80	1241.40	1680.00
	O	24.00	357.00	1299.00	1680.00
	X	4.45	5.00	2.67	12.12
1500 1999	E	201.50	223.60	690.90	935.00
	O	240.00	223.00	688.00	935.00
	X	6.60		1	61
750 1499	E	154.10	164.80	509.10	688.00
	O	231.00	154.00	504.00	688.00
	X	23.31		5	236
500 749	E	71.10	77.00	237.90	322.00
	O	100.00	99.00	213.00	322.00
	X	11.18	6.29	2.61	100.8
000 499	E	35.50	37.80	116.70	158.00
	O	40.00	62.00	92.00	158.00
	X	.6	15.49	5.23	20.80
TOTAL	E	833.00	905.00	2796.00	3784.00
	O	833.00	905.00	2796.00	3784.00
	X	81.52	26.78	10.57	45.97

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 124

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1952

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
2000	E	59.10	314.10	672.80	1046.00
UP	O	37.00	304.00	705.00	1046.00
	X	8.26	.33	1.54	10.13
1500	E	23.30	123.70	265.00	412.00
1999	O	20.00	126.00	266.00	412.00
	X	.47	.04		.51
750	E	18.10	96.10	205.80	320.00
1499	O	39.00	95.00	186.00	320.00
	X	24.13	1.01	1.91	26.05
500	E	10.20	54.40	116.40	181.00
749	O	9.00	66.00	106.00	181.00
	X	.14	2.47	.93	3.54
000	E	3.30	17.70	37.90	58.90
499	O	9.00	15.00	35.00	59.00
	X	9.85	.42	.24	10.51
TOTAL	E	114.00	606.00	1297.90	2017.90
	O	114.00	606.00	1298.00	2018.00
	X	42.85	3.27	4.62	50.74

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 125

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size	b	Achievement in Natural Sciences: Below Average	Average	Above Average	Total
2000	E	23.20	197.90	406.90	628.00
UP	O	20.00	196.00	410.00	626.00
	X	.44		2	.46
1500	E	191.10	162.90	335.00	517.00
1999	O	211.00	176.00	315.00	517.00
	X	1.9	1.40	3.6	2.45
750	E	135.80	117.20	241.00	372.00
1499	O	211.00	92.00	259.00	372.00
	X	37.6	5.42	1.34	10.52
500	E	53.0	44.70	92.00	142.00
749	O	1.00	51.00	90.00	142.00
	X	3.49	.89	.4	4.42
000	E	37.0	31.20	64.10	99.00
499	O	2.00	35.00	62.00	99.00
	X	.78	.46	.7	1.31
TOTAL	E	651.0	553.90	1139.00	1758.00
	O	650.00	554.00	1139.00	1756.00
	X	8.66	8.17	2.33	19.16

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 126

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 MERGED

School Size		Achievement in Natural Sciences: Below Average [b]	Average	Above Average	Total
2000 UP	E	79.40	514.30	1080.40	1674.10
	O	57.00	502.00	1115.00	1674.00
	X	6.32	.29	1.11	.72
1500 1999	E	44.00	285.40	599.60	929.00
	O	41.00	304.00	584.00	929.00
	X	.20	1.21	.41	1.82
750 1499	E	32.60	212.60	446.60	692.00
	O	60.00	187.00	445.00	692.00
	X	22.56	3.08	1	25.65
500 749	E	15.30	99.20	208.50	323.00
	O	10.00	117.00	196.00	323.00
	X	1.84	3.19	.75	5.78
000 499	E	7.50	48.50	102.00	158.00
	O	11.00	50.00	97.00	158.00
	X	1.63	.5	.26	1.94
TOTAL	E	179.00	1160.00	2437.10	3776.10
	O	179.00	1160.00	2437.00	3776.00
	X	32.55	7.82	2.54	42.91

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 127

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1952

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
2000	E	62.10	261.90	600.00	924.00
UP	O	72.00	276.00	576.00	924.00
	X	1.56	.76	.96	3.30
1500	E	27.60	116.50	266.90	411.00
1999	O	27.00	96.00	288.00	411.00
	X	.01	3.61	1.67	5.29
750	E	21.50	90.70	207.80	320.00
1499	O	18.00	90.00	212.00	320.00
	X	.57	.01	.08	.66
500	E	7.90	33.20	76.00	117.10
749	O	3.00	37.00	77.00	117.00
	X	3.04	.44	.01	3.49
000	E	4.00	16.70	38.30	59.00
499	O	3.00	20.00	36.00	59.00
	X	.26	.65	.15	1.06
TOTAL	E	123.10	519.00	1189.00	1831.10
	O	123.00	519.00	1189.00	1831.00
	X	.546	.547	.287	1.380

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 126

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size	[b]	Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
2000	E	33.30	197.30	397.40	628.00
UP	O	33.00	203.00	392.00	628.00
	X		1.7	7	2.4
1500	E	27.50	163.00	328.40	518.90
1999	O	23.00	156.00	340.00	519.00
	X	.74	.30	1.41	1.45
750	E	19.50	115.30	232.30	367.10
1499	O	19.00	109.00	239.00	367.00
	X	.1	.34	.19	.54
500	E	7.50	44.60	89.90	142.00
749	O	11.00	44.00	87.00	142.00
	X	1.63	.1	.9	1.73
000	E	5.20	30.80	62.00	98.00
499	O	7.00	39.00	52.00	98.00
	X	.63	2.18	1.62	4.43
TOTAL	E	93.00	551.00	1110.00	1754.00
	O	93.00	551.00	1110.00	1754.00
	X	3.01	3.00	2.38	8.39

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 129

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 MERGED

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
2000 UP	E	93.50	463.20	995.30	1552.00
	O	105.00	479.00	968.00	1552.00
	X	1.41	.54	.75	2.70
1500 1999	E	56.00	277.60	596.40	930.00
	O	50.00	252.00	628.00	930.00
	X	.64	2.36	1.67	4.67
750 1499	E	41.40	205.00	440.60	687.00
	O	37.00	199.00	451.00	687.00
	X	.47	.18	.25	.90
500 749	E	15.60	77.30	166.10	259.00
	O	14.00	81.00	164.00	259.00
	X	.16	.18	.03	.37
000 499	E	9.50	46.90	100.70	157.10
	O	10.00	59.00	88.00	157.00
	X	.03	3.13	1.61	4.77
TOTAL	E	216.00	1070.00	2299.10	3585.10
	O	216.00	1070.00	2299.00	3585.00
	X	2.71	6.39	4.31	13.41

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 130

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size	b	Achievement in English: Below Average c	Average	Above Average	Total
2000	E	183.00	306.30	115.70	545.00
UP	O	115.00	305.00	125.00	545.00
	X	1.52	.01	1.75	1.28
1500	E	194.80	485.00	183.20	863.00
1999	O	183.00	506.00	174.00	863.00
	X	.72	.91	.46	2.09
750	E	77.20	192.20	72.60	342.00
1499	O	73.00	181.00	88.00	342.00
	X	.23	.65	3.27	4.15
500	E	44.00	109.60	41.40	195.00
749	O	63.00	102.00	30.00	195.00
	X	6.20	.53	3.14	11.87
000	E	14.00	34.80	13.20	62.00
499	O	19.00	34.00	9.00	62.00
	X	1.60	.02	1.34	3.16
TOTAL	E	453.00	1127.90	426.10	2007.00
	O	453.00	1128.00	426.00	2007.00
	X	11.47	2.12	8.96	22.55

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 131

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1930

School Size		Achievement in English: Below Average	Average	Above Average	Total
2000	E	122.60	309.50	175.90	608.00
up	O	112.00	320.00	176.00	608.00
	X	.92	.36		1.28
1500	E	96.20	242.80	138.00	477.00
1999	O	81.00	247.00	149.00	477.00
	X	2.40	.07	.88	3.35
750	E	83.90	211.70	120.40	416.00
1499	O	72.00	195.00	149.00	416.00
	X	1.69	1.32	6.79	9.80
500	E	42.30	106.90	60.80	210.00
749	O	65.00	104.00	41.00	210.00
	X	12.18	.08	6.45	18.71
000	E	25.00	63.10	35.90	124.00
499	O	40.00	68.00	16.00	124.00
	X	9.00	.38	11.03	20.41
TOTAL	E	370.00	934.00	531.00	1835.00
	O	370.00	934.00	531.00	1835.00
	X	26.19	2.21	25.15	53.55

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 132

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II) 1951 AND 1950 MERGED

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
2000 UP	E	247.00	618.80	287.20	1153.00
	O	227.00	625.00	301.00	1153.00
	X	1.62	.06	.66	2.34
1500 1999	E	287.00	719.20	333.80	1340.00
	O	264.00	753.00	323.00	1340.00
	X	1.84	1.59	.35	3.78
750 1499	E	162.40	406.80	188.80	758.00
	O	145.00	376.00	237.00	758.00
	X	1.86	2.33	12.31	16.50
500 749	E	86.80	17.40	100.90	405.10
	O	128.00	206.00	71.00	405.00
	X	19.56	.60	8.86	29.02
000 499	E	39.80	99.80	46.30	185.90
	O	52.00	102.00	25.00	186.00
	X	3.26	.05	9.80	19.11
TOTAL	E	823.00	2062.00	957.00	3842.00
	O	823.00	2062.00	957.00	3842.00
	X	34.14	4.63	31.98	70.75

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 133

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size	b	Achievement in English: Below Average c	Average	Above Average	Total
2000	E	128.20	320.00	96.80	545.00
UP	O	135.00	313.00	97.00	545.00
	X	.36	.15		.51
1500	E	201.10	502.00	151.90	855.00
1999	O	194.00	506.00	163.00	855.00
	X	1.45	.7	.81	2.33
750	E	80.20	200.20	60.60	341.00
1499	O	75.00	209.00	57.00	341.00
	X	.34	.39	.21	.94
500	E	45.90	114.50	34.60	195.00
749	O	55.00	109.00	31.00	195.00
	X	1.80	.26	.37	2.43
000	E	14.60	36.40	11.00	62.00
499	O	21.00	34.00	7.00	62.00
	X	2.81	.16	1.46	4.43
TOTAL	E	470.00	1173.10	354.90	1998.00
	O	470.00	1173.00	355.00	1998.00
	X	6.76	.03	.285	1.064

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 134

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1930

School Size		Achievement in Social Studies: Below Average [b]	Average [c]	Above Average	Total
2000 UP	E	121.50	326.20	159.30	607.00
	O	104.00	315.00	191.00	607.00
	X	3.46	.39	6.31	10.16
1500 1999	E	95.30	255.80	124.90	476.00
	O	96.00	287.00	93.00	476.00
	X	.01	3.81	8.15	11.97
750 1499	E	83.30	223.50	109.20	416.00
	O	70.00	225.00	121.00	416.00
	X	2.12	.01	1.28	3.41
500 749	E	42.00	112.80	55.10	209.90
	O	52.00	97.00	61.00	210.00
	X	2.38	2.21	.03	5.22
000 499	E	24.80	66.60	32.50	123.90
	O	48.00	61.00	15.00	124.00
	X	21.71	1.47	9.43	31.61
TOTAL	E	366.90	984.90	481.00	1832.80
	O	367.00	985.00	481.00	1833.00
	X	29.68	6.89	25.80	62.37

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 135

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II) 1951 AND 1950 MERGED

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
2000 UP	E	251.70	648.90	251.40	1152.00
	O	236.00	628.00	288.00	1152.00
	X	.98	.67	5.33	6.98
1500 1999	E	290.80	749.80	290.50	1331.10
	O	280.00	795.00	256.00	1331.00
	X	.40	2.73	4.10	7.23
750 1499	E	165.40	426.40	165.20	757.00
	O	145.00	434.00	178.00	757.00
	X	2.52	.14	.99	3.65
500 749	E	88.50	228.10	88.40	405.00
	O	107.00	206.00	92.00	405.00
	X	3.87	2.14	.15	6.16
000 499	E	40.60	104.80	40.60	186.00
	O	69.00	95.00	22.00	186.00
	X	19.87	.92	8.53	29.32
TOTAL	E	837.00	2158.00	836.10	3831.10
	O	837.00	2158.00	836.00	3831.00
	X	27.64	6.60	19.10	53.34

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 136

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN MEDIUM HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Natural Sciences[b] Below Average[c]	Average	Above Average	Total
2000	E	141.80	283.10	116.10	541.00
UP	O	156.00	256.00	129.00	541.00
	X	1.42	2.60	1.43	5.45
1500	E	221.00	441.10	180.90	843.00
1999	O	217.00	458.00	168.00	843.00
	X	.7	1.65	.92	1.64
750	E	89.40	178.40	73.20	341.00
1499	O	76.00	194.00	71.00	341.00
	X	2.01	1.36	.7	3.44
500	E	50.90	101.50	41.60	194.00
749	O	53.00	93.00	48.00	194.00
	X	.9	.71	.98	1.78
000	E	16.00	31.90	13.10	61.00
499	O	17.00	35.00	9.00	61.00
	X	.7	.30	1.29	1.66
TOTAL	E	519.10	1036.00	424.90	1980.00
	O	519.00	1036.00	425.00	1980.00
	X	3.66	5.62	4.69	13.97

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 137

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size	[b]	Achievement in Natural Sciences: Below Average [c]	Average	Above Average	Total
2000	E	151.00	328.50	124.20	604.00
UP	O	149.00	334.00	121.00	804.00
	X	.03	.08	.08	.19
1500	E	118.00	257.00	97.00	472.00
1999	O	129.00	257.00	86.00	472.00
	X	1.03		1.25	2.28
750	E	103.50	225.40	85.10	414.00
1499	O	81.00	214.00	119.00	414.00
	X	4.89	1.58	13.50	18.97
500	E	52.50	114.30	43.20	210.00
749	O	53.00	116.00	41.00	210.00
	X	.01	.03	.11	.14
000	E	31.00	67.50	25.50	124.00
499	O	44.00	72.00	8.00	124.00
	X	5.45	.30	12.01	17.76
TOTAL	E	456.00	993.00	375.00	1824.00
	O	456.00	993.00	375.00	1824.00
	X	11.40	.99	26.95	39.34

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 138

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II) 1952 AND 1950 COMBINED

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
2000	E	293.50	610.70	240.80	1145.00
UP	O	305.00	590.00	250.00	1145.00
	X	1.45	.70	1.35	1.50
1500	E	337.00	701.40	276.60	1315.00
1999	O	346.00	715.00	254.00	1315.00
	X	.24	.26	1.65	2.35
750	E	193.50	402.70	158.80	755.00
1499	O	157.00	408.00	190.00	755.00
	X	6.89	.07	6.13	13.09
500	E	103.50	215.50	85.00	404.00
749	O	106.00	209.00	89.00	404.00
	X	.06	.20	1.19	1.45
000	E	47.40	98.70	38.90	185.00
499	O	61.00	107.00	17.00	185.00
	X	3.91	.70	12.33	16.94
TOTAL	E	974.90	2029.00	800.10	3804.00
	O	975.00	2029.00	800.00	3804.00
	X	11.55	1.93	20.85	34.33

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 139

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
2000	E	155.90	259.50	123.60	539.00
UP	O	149.00	251.00	138.00	538.00
	X	.31	.28	1.93	2.52
1500	E	196.20	326.50	154.20	676.90
1999	O	226.00	319.00	132.00	677.00
	X	4.53	.17	3.20	7.90
750	E	98.80	164.50	77.70	341.00
1499	O	79.00	177.00	85.00	341.00
	X	3.97	.95	.69	5.61
500	E	40.30	67.00	31.70	139.00
749	O	36.00	70.00	33.00	139.00
	X	.46	.13	.05	.64
000	E	17.70	29.40	13.90	61.00
499	O	19.00	30.00	12.00	61.00
	X	.10	.01	.26	.37
TOTAL	E	508.90	846.90	400.10	1755.90
	O	509.00	847.00	400.00	1756.00
	X	.937	.154	.613	1.704

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 140

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
2000	E	142.70	320.00	144.30	607.00
UP	O	172.00	306.00	129.00	607.00
	X	6.02	.61	1.62	8.25
1500	E	110.50	247.70	111.80	470.00
1999	O	98.00	247.00	125.00	470.00
	X	1.41		1.56	2.97
750	E	97.60	218.80	98.70	415.10
1499	O	69.00	225.00	121.00	415.00
	X	8.38	.18	5.04	13.60
500	E	49.10	110.20	49.70	209.00
749	O	51.00	117.00	41.00	209.00
	X	.7	.42	1.52	2.01
000	E	29.10	65.40	29.50	124.00
499	O	39.00	67.00	18.00	124.00
	X	3.37	.4	4.48	7.89
TOTAL	E	429.00	962.10	434.00	1825.10
	O	429.00	962.00	434.00	1825.00
	X	19.25	1.25	14.22	34.72

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 11.1

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II) 1951 AND 1950 NORMS

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
2000 UP	E	259.90	578.40	266.70	1145.00
	O	321.00	557.00	267.00	1145.00
	X	14.88	0.79		3.27
1500 1999	E	300.40	579.40	267.10	1146.90
	O	324.00	566.00	257.00	1147.00
	X	1.85	0.31	0.38	2.54
750 1499	E	193.00	381.90	176.10	756.00
	O	148.00	402.00	206.00	756.00
	X	12.63	1.06	5.08	18.77
500 749	E	91.20	175.80	81.00	348.00
	O	87.00	187.00	74.00	348.00
	X	0.19	0.71	0.61	1.51
000 499	E	48.50	93.50	43.10	185.10
	O	58.00	97.00	30.00	185.00
	X	1.86	0.14	3.98	5.98
TOTAL	E	938.00	1809.00	834.00	3581.00
	O	938.00	1809.00	834.00	3581.00
	X	18.01	3.01	10.05	31.07

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 142

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
2000	E	283.50	136.60	13.90	434.00
UP	O	296.00	126.00	12.00	434.00
	X	.55	.82	.26	1.63
1500	E	211.60	102.00	10.40	324.00
1999	O	192.00	117.00	15.00	324.00
	X	1.82	2.21	2.03	6.06
750	E	170.50	82.10	8.40	261.00
1499	O	168.00	84.00	9.00	261.00
	X	.04	.04	.04	.12
500	E	105.80	51.00	5.20	162.00
749	O	116.00	43.00	3.00	162.00
	X	.98	1.25	.93	3.16
000	E	21.60	10.40	1.10	33.10
499	O	21.00	12.00		33.00
	X	.2	.26	1.32	1.62
TOTAL	E	793.00	382.10	39.00	1214.10
	O	793.00	382.00	39.00	1214.00
	X	3.41	4.60	4.58	12.59

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 143

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1930

School Size	[b]	Achievement in English: Below Average [c]	Average	Above Average	Total
2000	E	266.50	157.60	22.90	447.00
UP	O	264.00	159.00	24.00	447.00
	X	.12	.01	.05	.18
1500	E	221.20	130.80	19.00	371.00
1999	O	216.00	140.00	15.00	371.00
	X	.122	.655	.842	1.619
750	E	184.20	109.00	15.80	309.00
1499	O	173.00	115.00	21.00	309.00
	X	.664	.330	1.771	2.765
500	E	101.40	59.90	8.70	170.00
749	O	109.00	53.00	8.00	170.00
	X	.577	.801	.046	1.424
000	E	41.70	24.70	3.60	70.00
499	O	53.00	15.00	2.00	70.00
	X	3.107	3.883	.856	7.846
TOTAL	E	815.00	482.00	70.00	1367.00
	O	815.00	482.00	70.00	1367.00
	X	4.46	5.62	3.51	13.59

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 11h

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II) 1951 AND 1950 COMBINED

School Size		Achievement in English: Below Average	Average	Above Average	Total
2000	E	548.90	294.90	37.20	881.00
UP	O	560.00	265.00	36.00	881.00
	X	.23	.33	.04	.60
1500	E	433.00	232.70	29.40	695.10
1999	O	406.00	257.00	30.00	695.00
	X	1.44	2.54	.01	3.99
750	E	355.10	190.80	24.10	570.00
1499	O	341.00	199.00	30.00	570.00
	X	.56	.35	1.44	2.35
500	E	206.80	111.10	14.00	331.90
749	O	225.00	96.00	11.00	332.00
	X	1.60	2.05	.64	4.29
000	E	64.20	34.50	4.30	103.00
499	O	74.00	27.00	2.00	103.00
	X	1.50	1.65	1.46	4.61
TOTAL	E	1606.00	864.00	109.00	2581.00
	O	1606.00	864.00	109.00	2581.00
	X	5.33	6.92	3.59	15.84

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 145

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Social Studies[b]			
		Below Average	Average	Above Average	Total
2000	E	297.40	123.10	8.50	429.00
UP	O	309.00	112.00	8.00	429.00
	X	1.45	1.00	3	1.48
1500	E	222.50	92.10	6.40	321.00
1999	O	196.00	116.00	9.00	321.00
	X	3.16	6.20	1.06	10.42
750	E	180.20	74.60	5.20	260.00
1499	O	188.00	66.00	6.00	260.00
	X	.34	.99	.12	1.45
500	E	113.00	46.80	3.20	163.00
749	O	113.00	50.00		163.00
	X		.22	3.20	3.42
000	E	23.90	9.50	.70	33.10
499	O	30.00	2.00	1.00	33.00
	X	2.21	5.93	.14	8.28
TOTAL	E	836.00	346.10	24.00	1206.10
	O	836.00	346.00	24.00	1206.00
	X	6.16	14.34	4.55	25.05

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 146

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in Social Studies: Below Average [b]	Average	Above Average	Total
2000	E	291.10	138.90	16.00	446.00
UP	O	278.00	150.00	18.00	446.00
	X	.59	.89	.25	1.73
1500	E	241.50	115.20	13.30	370.00
1999	O	253.00	110.00	7.00	370.00
	X	.55	.23	2.98	3.76
750	E	202.40	96.50	11.10	310.00
1499	O	184.00	112.00	14.00	310.00
	X	1.67	2.49	.76	4.92
500	E	111.60	53.30	6.10	171.00
749	O	120.00	42.00	9.00	171.00
	X	.63	2.40	1.38	4.41
000	E	46.30	22.10	2.50	70.90
499	O	56.00	12.00	1.00	71.00
	X	2.96	4.62	.90	8.48
TOTAL	E	892.90	426.00	49.00	1367.90
	O	893.00	426.00	49.00	1368.00
	X	6.40	10.63	6.27	23.30

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 14.7

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 METHOD

School Size	b	Achievement in Social Studies: Below Average c	Average	Above Average	Total
2000	E	587.80	262.40	24.80	875.00
UP	O	587.00	262.00	26.00	875.00
	X			6	6
1500	E	464.20	207.20	19.60	691.00
1999	O	449.00	226.00	16.00	691.00
	X	50	1.71	66	2.87
750	E	382.90	171.00	16.20	570.10
1499	O	372.00	178.00	20.00	570.00
	X	31	29	89	1.49
500	E	224.40	100.20	9.50	334.10
749	O	233.00	92.00	9.00	334.00
	X	33	67	3	103
000	E	69.90	31.20	2.90	104.00
499	O	88.00	14.00	2.00	104.00
	X	4.69	9.49	28	14.46
TOTAL	E	1729.20	772.00	73.00	2574.20
	O	1729.00	772.00	73.00	2574.00
	X	5.83	12.16	1.92	19.91

b The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

c The location of the decimal point is indicated by the dotted line.

TABLE 148

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Natural Sciences[a]			
		Below Average[b]	Average	Above Average	Total
2000	E	198.20	106.80	13.10	318.10
UP	O	189.00	112.00	17.00	318.00
	X	.43	.25	1.16	1.84
1500	E	263.60	142.10	17.40	423.10
1999	O	277.00	133.00	13.00	423.00
	X	.68	.58	1.11	2.37
750	E	161.40	87.00	10.60	259.00
1499	O	153.00	93.00	13.00	259.00
	X	.44	.41	.54	1.39
500	E	100.90	54.40	6.60	161.90
749	O	103.00	55.00	4.00	162.00
	X	.4	.1	1.02	1.07
000	E	19.90	10.70	1.30	31.90
499	O	22.00	8.00	2.00	32.00
	X	.22	.69	.38	1.29
TOTAL	E	744.00	401.00	49.00	1194.00
	O	744.00	401.00	49.00	1194.00
	X	1.61	1.94	4.21	7.96

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[a] The location of the decimal point is indicated by the dotted line.

TABLE 149

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in Natural Sciences: Below Average [b]	Average	Above Average	Total
2000	E	288.30	136.80	19.90	444.90
UP	O	299.00	131.00	15.00	445.00
	X	.40	.25	1.16	1.81
1500	E	240.40	114.10	16.50	371.00
1999	O	258.00	100.00	13.00	371.00
	X	1.29	1.74	.74	3.77
750	E	202.20	95.90	13.90	312.00
1499	O	168.00	116.00	26.00	312.00
	X	5.79	5.09	10.53	21.41
500	E	110.10	52.30	7.60	170.00
749	O	112.00	51.00	7.00	170.00
	X	.3	.3	.5	1.1
000	E	46.00	21.80	3.20	71.00
499	O	50.00	21.00		71.00
	X	.35	.3	3.20	3.85
TOTAL	E	887.00	420.90	61.00	1368.90
	O	887.00	421.00	61.00	1369.00
	X	7.86	7.14	15.68	30.68

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 150

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 MERGED

School Size	[b]	Achievement in Natural Sciences: Below Average [c]	Average	Above Average	Total
2000	E	485.50	244.70	32.70	762.90
UP	O	466.00	243.00	32.00	763.00
	X	1	1	2	4
1500	E	505.30	254.70	34.10	794.10
1999	O	535.00	233.00	26.00	794.00
	X	1.75	1.65	1.92	5.52
750	E	363.40	183.10	24.50	571.00
1499	O	321.00	211.00	39.00	571.00
	X	4.95	4.25	8.55	17.76
500	E	211.30	106.50	14.20	332.00
749	O	215.00	106.00	11.00	332.00
	X	6		72	78
000	E	65.50	33.00	4.40	102.90
499	O	72.00	29.00	2.00	103.00
	X	.65	.49	1.31	2.45
TOTAL	E	1631.00	822.00	109.90	2562.90
	O	1631.00	822.00	110.00	2563.00
	X	7.42	6.60	12.55	26.57

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 151

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average [c]	Above Average	Total
2000	E	200.40	101.90	16.70	319.00
UP	O	206.00	85.00	25.00	319.00
	X	1.16	1.90	4.13	8.19
1500	E	189.10	96.10	15.80	301.00
1999	O	201.00	85.00	15.00	301.00
	X	.75	1.68	.91	2.34
750	E	163.30	83.00	13.60	259.90
1499	O	149.00	97.00	14.00	260.00
	X	1.25	2.36	.1	3.62
500	E	85.40	43.40	7.10	135.90
749	O	79.00	53.00	4.00	136.00
	X	.48	2.12	1.35	3.95
000	E	20.70	10.50	1.70	32.90
499	O	24.00	9.00		33.00
	X	.53	.22	1.70	2.45
TOTAL	E	658.90	334.90	54.90	1048.70
	O	659.00	335.00	55.00	1049.00
	X	3.17	7.28	8.10	18.55

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 152

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1950

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
2000	E	256.10	165.50	23.50	445.10
UP	O	277.00	148.00	20.00	445.00
	X	1.71	1.85	.52	4.08
1500	E	212.90	137.60	19.50	370.00
1999	O	220.00	125.00	25.00	370.00
	X	.24	1.15	1.55	2.94
750	E	178.40	115.30	16.30	310.00
1499	O	142.00	149.00	19.00	310.00
	X	7.43	9.85	.45	17.73
500	E	98.40	63.60	9.00	171.00
749	O	103.00	61.00	7.00	171.00
	X	.22	.11	.44	.77
000	E	40.30	26.00	3.70	70.00
499	O	44.00	25.00	1.00	70.00
	X	.34	.4	1.97	2.35
TOTAL	E	786.10	508.00	72.00	1366.10
	O	786.00	508.00	72.00	1366.00
	X	9.94	13.00	4.93	27.87

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 153

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN SENIOR HIGH SCHOOLS (PART II), 1951 AND 1950 COMBINED

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
2000 UP	E	457.10	266.70	40.20	764.00
	O	483.00	236.00	45.00	764.00
	X	1.47	3.53	.57	5.57
1500 1999	E	401.50	234.20	35.30	671.00
	O	421.00	213.00	37.00	671.00
	X	.95	1.92	.8	2.95
750 1499	E	341.10	199.00	30.00	570.10
	O	291.00	246.00	33.00	570.00
	X	7.36	11.10	.30	18.76
500 749	E	183.70	107.20	16.10	307.00
	O	182.00	114.00	11.00	307.00
	X	.2	.43	1.62	2.07
000 499	E	61.60	36.00	5.40	103.00
	O	66.00	34.00	1.00	103.00
	X	.66	.11	3.59	4.36
TOTAL	E	1445.00	843.10	127.00	2415.10
	O	1445.00	843.00	127.00	2415.00
	X	10.46	17.09	6.16	33.71

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 154

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS
1951

School Size		Psychological Categories: Below Average [c]	Average	Above Average	Total
1000	E				
UP	O				
	X				
500	E	25000	18360	8940	52300
999	O	26000	18900	7400	52300
	X	40	16	266	321
300	E	26480	19450	9470	55400
499	O	23600	18700	13100	55400
	X	313	29	1391	1733
200	E	28010	20580	10010	58600
299	O	26600	21500	10500	58600
	X	71	41	24	136
000	E	32410	23810	11580	67800
199	O	35700	23100	9000	67800
	X	354	21	575	930
TOTAL	E	111900	82200	40000	234100
	O	111900	82200	40000	234100
	X	758	107	2255	3120

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 155

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN THEIR YEAR-SCHOOLS 1950

School Size		Psychological Categories: Below Average [b]	Average	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500 999	E	153.00	91.30	56.60	300.90
	O	166.00	98.00	37.00	301.00
	X	1.11	.49	6.79	8.39
300 499	E	259.80	155.00	96.10	510.90
	O	221.00	166.00	124.00	511.00
	X	5.79	.78	8.10	14.67
200 299	E	267.40	159.60	99.00	526.00
	O	252.00	157.00	117.00	526.00
	X	.89	.4	3.27	4.20
000 199	E	492.70	294.00	182.30	969.00
	O	534.00	279.00	156.00	969.00
	X	3.46	.77	3.80	8.03
TOTAL	E	1172.90	699.90	434.00	2306.80
	O	1173.00	700.00	434.00	2307.00
	X	11.25	2.08	21.96	35.29

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 156

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SESSIONS IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in English: Below Average [a]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	251.60	181.80	89.60	523.00
	O	225.00	191.00	107.00	523.00
	X	2.81	.47	3.38	6.66
300 499	E	266.60	192.60	94.90	554.10
	O	230.00	211.00	113.00	554.00
	X	5.02	1.76	3.45	10.23
200 299	E	282.00	203.70	100.30	586.00
	O	268.00	211.00	107.00	586.00
	X	.70	.26	.45	1.41
000 199	E	323.80	233.90	115.20	672.90
	O	401.00	199.00	73.00	673.00
	X	18.41	5.21	15.46	39.08
TOTAL	E	1124.00	812.00	400.00	2336.00
	O	1124.00	812.00	400.00	2336.00
	X	26.94	7.70	22.74	57.38

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 157

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in English			
		Below Average [b]	Average [c]	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	149.20	102.60	49.30	301.10
	O	145.00	119.00	37.00	301.00
	X	.12	2.62	3.07	5.81
300 499	E	253.30	174.10	83.60	511.00
	O	228.00	181.00	102.00	511.00
	X	2.53	.27	4.05	6.85
200 299	E	260.70	179.20	86.10	526.00
	O	249.00	181.00	96.00	526.00
	X	.53	.02	1.14	1.69
000 199	E	478.80	329.10	158.10	966.00
	O	520.00	304.00	142.00	966.00
	X	3.65	1.91	1.64	7.10
TOTAL	E	1142.00	785.00	377.10	2304.10
	O	1142.00	785.00	377.00	2304.00
	X	6.73	4.82	9.90	21.45

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 158

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000 and Up [a]	E				
	O				
	X				
500 - 999	E	246.10	183.10	91.90	521.10
	O	243.00	183.00	95.00	521.00
	X	4		11	15
300 - 499	E	261.20	194.30	97.50	553.00
	O	233.00	209.00	111.00	553.00
	X	3.05	1.11	1.87	6.03
200 - 299	E	276.30	205.50	103.10	584.90
	O	257.00	215.00	113.00	585.00
	X	1.35	.44	.95	2.74
000 - 199	E	317.40	236.10	118.50	672.00
	O	368.00	212.00	92.00	672.00
	X	8.07	2.46	5.93	16.46
TOTAL	E	1101.00	819.00	411.00	2331.00
	O	1101.00	819.00	411.00	2331.00
	X	12.51	4.01	8.86	25.38

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 139

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SECTIONS IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in Social Studies: Below Average [b]	Average	Above Average	Total
1000 and Up [a]	E				
	O				
	X				
500 - 999	E	146.20	94.60	58.00	301.00
	O	150.00	133.00	38.00	301.00
	X	.2	3.50	6.90	10.42
300 - 499	E	251.60	160.90	98.40	510.90
	O	205.00	175.00	131.00	511.00
	X	8.63	1.24	10.80	20.67
200 - 299	E	258.50	165.40	101.10	525.00
	O	248.00	159.00	118.00	525.00
	X	.43	.25	2.83	3.51
000 - 199	E	476.70	304.90	186.50	968.10
	O	532.00	279.00	157.00	968.00
	X	6.42	2.20	4.67	13.29
TOTAL	E	1135.00	726.00	444.00	2305.00
	O	1135.00	726.00	444.00	2305.00
	X	15.50	7.19	25.20	47.89

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 160

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SECTIONS IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000 up [a]	E				
	O				
	X				
500 999	E	222.90	192.20	105.90	521.00
	O	205.00	188.00	128.00	521.00
	X	1.44	.9	4.61	6.14
300 499	E	236.10	203.60	112.30	552.00
	O	212.00	203.00	137.00	552.00
	X	2.46		5.43	7.89
200 299	E	249.80	215.40	118.80	584.00
	O	236.00	231.00	117.00	584.00
	X	.76	1.13	.3	1.92
000 199	E	286.20	246.80	136.00	669.00
	O	342.00	236.00	91.00	669.00
	X	10.88	.47	14.89	26.24
TOTAL	E	995.00	858.00	473.00	2326.00
	O	995.00	855.00	473.00	2326.00
	X	15.54	1.69	24.96	42.19

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 161

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000 up [a]	E				
	O				
	X				
500 999	E	129.50	113.10	57.40	300.00
	O	112.00	127.00	61.00	300.00
	X	2.37	1.71	.23	4.31
300 499	E	216.10	190.30	96.60	505.00
	O	195.00	188.00	122.00	505.00
	X	2.45	.03	6.68	9.16
200 299	E	225.80	197.10	100.00	522.90
	O	227.00	196.00	100.00	523.00
	X	.01	.01		.02
000 199	E	417.60	364.50	185.00	967.10
	O	457.00	354.00	156.00	967.00
	X	3.72	.30	4.55	8.57
TOTAL	E	991.00	865.00	439.00	2295.00
	O	991.00	865.00	439.00	2295.00
	X	8.55	2.05	11.46	22.06

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 164

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500 999	E	209.30	205.90	102.70	517.90
	O	186.00	210.00	122.00	518.00
	X	2.59	.8	3.63	6.30
300 499	E	223.10	219.40	109.50	552.00
	O	190.00	233.00	129.00	552.00
	X	4.91	.84	3.47	9.22
200 299	E	219.40	215.90	107.70	543.00
	O	212.00	219.00	112.00	543.00
	X	.25	.5	.17	.47
000 199	E	269.10	264.80	132.10	666.00
	O	333.00	244.00	89.00	666.00
	X	15.17	1.63	14.06	30.86
TOTAL	E	920.90	906.00	452.00	2278.90
	O	921.00	906.00	452.00	2279.00
	X	22.92	2.60	21.33	46.85

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 163

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN TWELVE-YEAR SCHOOLS, 1930

School Size	[b]	Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500	E	120.50	120.90	56.50	299.90
999	O	105.00	143.00	52.00	300.00
	X	2.00	4.04	.72	6.76
300	E	204.90	205.60	99.50	510.00
499	O	191.00	202.00	117.00	510.00
	X	1.94	.06	3.08	4.08
200	E	210.20	10.80	102.00	523.00
299	O	211.00	214.00	98.00	523.00
	X		.05	.16	.21
000	E	387.40	388.60	188.00	964.00
199	O	416.00	367.00	181.00	964.00
	X	2.11	1.20	.26	3.57
TOTAL	E	923.00	925.90	448.00	2296.90
	O	923.00	926.00	448.00	2297.00
	X	5.05	5.35	4.22	14.62

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 164

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in English: Below Average	Average	Above Average	Total
1000 UP[a]	E				
	O				
	X				
500 999	E	2'40	24'10	47'50	74'00
	O	2'00	22'00	50'00	74'00
	X	.7	.18	.13	.38
300 499	E	4'30	42'70	84'10	131'10
	O	4'00	39'00	88'00	131'00
	X	.2	.32	.18	.52
200 299	E	3'40	34'20	67'40	105'00
	O	4'00	32'00	69'00	105'00
	X	.11	.14	.4	.29
000 199	E	2'90	29'00	57'10	89'00
	O	3'00	37'00	49'00	89'00
	X		.21	.15	.36
TOTAL	E	13'00	130'00	256'10	399'10
	O	13'00	130'00	256'00	399'00
	X	.20	.265	.150	.455

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 165

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR JUNIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000 and UP [a]	E				
	O				
	X				
500 - 999	E	2.30	13.70	21.00	37.00
	O	2.00	16.00	19.00	37.00
	X	.4	.39	.19	.62
300 - 499	E	7.70	46.00	70.30	124.00
	O	8.00	38.00	78.00	124.00
	X	.1	1.39	.84	2.24
200 - 299	E	7.30	43.40	66.30	117.00
	O	4.00	47.00	66.00	117.00
	X	1.49	.30		1.79
000 - 199	E	9.70	57.90	88.40	156.00
	O	13.00	60.00	83.00	156.00
	X	1.12	.8	.33	1.53
TOTAL	E	27.00	161.00	246.00	434.00
	O	27.00	161.00	246.00	434.00
	X	2.66	2.16	1.36	6.18

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 166

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN THREE-YEAR SCHOOLS, 1951

School Size	[b]	Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	3.00	22.30	48.70	74.00
	O	4.00	26.00	44.00	74.00
	X	.34	.61	.46	1.41
300 499	E	5.20	39.20	85.60	130.00
	O	2.00	38.00	90.00	130.00
	X	1.97	4	.23	2.24
200 299	E	4.20	31.70	69.10	105.00
	O	5.00	31.00	69.00	105.00
	X	.15	.2		.17
000 199	E	3.60	26.80	58.60	89.00
	O	5.00	25.00	59.00	89.00
	X	.54	.12		.66
TOTAL	E	16.00	120.00	262.00	398.00
	O	16.00	120.00	262.00	398.00
	X	3.00	.79	.69	4.48

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 167

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1930

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	32.0	109.0	239.0	370.0
	O	30.0	130.0	210.0	370.0
	X	2.9	4.1	3.5	10.5
300 499	E	74.0	366.0	800.0	1240.0
	O	40.0	330.0	870.0	1240.0
	X	15.6	3.5	6.1	25.2
200 299	E	70.0	345.0	755.0	1170.0
	O	80.0	340.0	750.0	1170.0
	X	1.4	1		1.5
000 199	E	93.0	460.0	1006.0	1559.0
	O	110.0	480.0	970.0	1560.0
	X	3.1	9	1.3	6.3
TOTAL	E	259.0	1280.0	2800.0	4339.0
	O	260.0	1280.0	2800.0	4340.0
	X	23.0	8.6	10.9	42.5

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 168

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences: Below Average	Average	Above Average	Total
1000 UP[a]	E				
	O				
	X				
500 999	E	2,80	22,50	48,70	74,00
	O	2,00	21,00	51,00	74,00
	X	,23	,10	,11	,44
300 499	E	4,90	39,50	85,60	130,00
	O	5,00	37,00	88,00	130,00
	X		,16	,7	,23
200 299	E	4,00	31,90	69,10	105,00
	O	4,00	37,00	64,00	105,00
	X		,82	,38	1,20
000 199	E	3,40	27,10	58,60	89,10
	O	4,00	26,00	59,00	89,00
	X	,11	,5		,16
TOTAL	E	15,10	121,00	262,00	398,10
	O	15,00	121,00	262,00	398,00
	X	,34	1,03	,56	2,03

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 169

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1930

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average [c]	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500 999	E	2.00	13.50	21.50	37.00
	O	2.00	14.00	21.00	37.00
	X		2	1	3
300 499	E	6.90	45.10	73.00	124.00
	O	7.00	37.00	80.00	124.00
	X		1.45	.89	2.34
200 299	E	6.50	42.80	67.90	117.00
	O	5.00	44.00	68.00	117.00
	X	.35	.5		.40
000 199	E	8.60	56.80	90.60	155.00
	O	10.00	63.00	83.00	155.00
	X	.23	.68	.64	1.55
TOTAL	E	24.00	158.00	252.00	434.00
	O	24.00	158.00	252.00	434.00
	X	.58	2.20	1.54	4.32

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 170

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics			
		Below Average [a]	Average	Above Average	Total
1000 Up [*]	E				
	O				
	X				
500 999	E	51.40	247.70	439.90	740.00
	O	40.00	240.00	460.00	740.00
	X	3.6	.2	1.0	4.8
300 499	E	91.40	431.40	771.10	1293.90
	O	80.00	400.00	820.00	1300.00
	X	1.21	.27	1.31	.79
200 299	E	62.80	314.40	558.80	940.00
	O	70.00	350.00	520.00	940.00
	X	1.1	4.1	2.6	6.8
000 199	E	64.40	294.40	529.20	888.00
	O	90.00	300.00	498.00	888.00
	X	10.6	1.1	2.0	12.7
TOTAL	E	288.00	1289.90	2299.00	3859.90
	O	280.00	1290.00	2299.00	3860.00
	X	16.4	7.1	8.7	32.2

[*] There were no schools in this school size category.

[a] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[b] The location of the decimal point is indicated by the dotted line.

TABLE 27A

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR CHILDREN WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN TWELFTH GRADE SCHOOLS, 1950

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000 up [a]	E				
	O				
	X				
500 - 999	E	240	1360	2100	3700
	O	200	1800	1700	3700
	X	7	142	76	225
300 - 499	E	800	4550	7040	12390
	O	600	3900	7900	12400
	X	50	93	105	248
200 - 299	E	760	4300	6650	11710
	O	1100	4900	5800	11700
	X	152	58	109	319
000 - 199	E	1000	5690	8810	15500
	O	900	5400	9200	15500
	X	10	15	17	42
TOTAL	E	2800	15900	24600	43300
	O	2800	15900	24600	43300
	X	219	308	307	834

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 172

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in English: Below Average [b]	Average	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500 999	E	60 70	99 10	29 20	189 00
	O	41 00	98 00	50 00	189 00
	X	6 39	1	14 82	21 22
300 499	E	60 10	98 00	28 90	187 00
	O	49 00	116 00	22 00	187 00
	X	2 05	3 31	1 65	7 01
200 299	E	69 10	112 70	33 20	215 00
	O	65 00	116 00	34 00	215 00
	X	24	10	2	36
000 199	E	74 20	121 10	35 70	231 00
	O	109 00	101 00	21 00	231 00
	X	16 32	3 34	6 05	25 71
TOTAL	E	264 10	430 90	127 00	822 00
	O	264 00	431 00	127 00	822 00
	X	25 00	6 76	22 54	54 30

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 173

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500	E	30.40	51.50	16.10	98.00
999	O	31.00	50.00	17.00	98.00
	X	1	4	5	10
300	E	51.50	87.30	27.30	166.10
499	O	50.00	94.00	22.00	166.00
	X	4	51	1.03	1.58
200	E	48.70	82.50	25.80	157.00
299	O	55.00	76.00	26.00	157.00
	X	82	51		133
000	E	86.50	146.70	45.80	279.00
199	O	81.00	148.00	50.00	279.00
	X	35	1	39	75
TOTAL	E	217.10	368.00	115.00	700.10
	O	217.00	368.00	115.00	700.00
	X	122	107	1.47	376

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 174

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000 and up[a]	E	57.30	100.60	30.00	187.90
	O	49.00	95.00	44.00	188.00
	X	1.20	.31	6.53	8.04
500 - 999	E	57.00	100.10	29.90	187.00
	O	56.00	111.00	20.00	187.00
	X	.02	1.19	3.28	4.49
300 - 499	E	65.50	115.10	34.30	214.90
	O	57.00	118.00	40.00	215.00
	X	1.10	.07	.95	2.12
000 - 199	E	70.10	123.10	36.70	229.90
	O	88.00	115.00	27.00	230.00
	X	4.57	.53	2.56	7.66
TOTAL	E	249.90	438.90	130.90	819.70
	O	250.00	439.00	131.00	820.00
	X	.689	2.10	13.32	22.31

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 17b

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1930

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000 Up[a]	E				
	O				
	X				
500 999	E	27.20	51.50	19.30	98.00
	O	29.00	54.00	15.00	98.00
	X	1.12	1.12	.96	1.20
300 499	E	46.10	87.20	32.80	166.10
	O	38.00	90.00	38.00	166.00
	X	1.42	.9	.83	2.34
200 299	E	43.60	82.40	31.00	157.00
	O	46.00	78.00	33.00	157.00
	X	.13	.24	.13	.50
000 199	E	77.20	146.00	54.90	278.10
	O	81.00	145.00	52.00	278.00
	X	.19	.1	.15	.35
TOTAL	E	194.10	367.10	138.00	699.20
	O	194.00	367.00	138.00	699.00
	X	1.86	.46	2.07	4.39

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 176

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences: Below Average	Average	Above Average	Total
1000	E				
UP[a]	O				
	X				
500	E	49.90	98.00	40.00	187.90
999	O	39.00	90.00	59.00	188.00
	X	2.36	1.65	9.03	12.06
300	E	49.40	97.00	39.60	186.00
499	O	50.00	94.00	42.00	186.00
	X	1	9	15	25
200	E	57.10	112.10	45.80	215.00
299	O	53.00	113.00	49.00	215.00
	X	29	1	22	52
000	E	60.60	118.90	48.60	228.10
199	O	75.00	129.00	24.00	228.00
	X	3.42	86	12.45	16.73
TOTAL	E	217.00	426.00	174.00	817.00
	O	217.00	426.00	174.00	817.00
	X	6.10	1.61	21.85	29.56

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 177

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SCHOOLS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in Natural Science			
		Below Average [b]	Average	Above Average	Total
1000 and over [a]	E				
	O				
	X				
500 - 999	E	24.20	52.20	21.50	97.90
	O	10.00	57.00	31.00	98.00
	X	8.33	.44	4.20	12.97
300 - 499	E	40.50	87.40	36.10	164.00
	O	41.00	89.00	34.00	164.00
	X	.1	.3	.12	1.6
200 - 299	E	38.30	82.60	34.10	155.00
	O	48.00	79.00	28.00	155.00
	X	2.46	1.6	1.09	3.71
000 - 199	E	68.90	148.70	61.30	278.90
	O	73.00	146.00	60.00	279.00
	X	.24	.5	.3	.32
TOTAL	E	171.90	370.90	153.00	695.80
	O	172.00	371.00	153.00	696.00
	X	11.04	.68	5.44	17.16

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 178

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 - 999	E	50.60	96.20	40.20	187.00
	O	37.00	93.00	57.00	187.00
	X	3.56	1.11	7.02	10.79
300 - 499	E	50.40	95.70	40.00	186.10
	O	48.00	102.00	36.00	186.00
	X	.11	.42	.40	.93
200 - 299	E	55.50	105.40	44.10	205.00
	O	53.00	102.00	50.00	205.00
	X	.11	.11	.79	1.01
000 - 199	E	61.50	116.70	48.80	227.00
	O	80.00	117.00	30.00	227.00
	X	5.57		7.24	12.81
TOTAL	E	218.00	414.00	173.10	805.10
	O	218.00	414.00	173.00	805.00
	X	9.45	.64	15.45	25.54

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 179

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1930

School Size		Achievement in Mathematics: Below Average	Average	Above Average	Total
1000 Up[a]	E				
	O				
	X				
500 999	E	23.60	52.00	22.40	98.00
	O	15.00	55.00	28.00	98.00
	X	3.13	.17	1.40	4.70
300 499	E	40.00	88.10	37.90	166.00
	O	40.00	98.00	28.00	166.00
	X		1.11	2.59	3.70
200 299	E	37.40	82.30	35.40	155.10
	O	38.00	85.00	32.00	155.00
	X	.1	.9	.33	.43
000 199	E	67.00	147.60	83.40	278.00
	O	75.00	132.00	71.00	278.00
	X	.96	1.65	.91	3.52
TOTAL	E	168.00	370.00	159.10	697.10
	O	168.00	370.00	159.00	697.00
	X	4.10	3.02	5.23	12.35

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 100

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
1000	E				
up [a]	O				
	X				
500	E	197.50	58.50	4.00	260.00
999	O	182.00	71.00	7.00	260.00
	X	1.22	2.67	2.25	6.14
300	E	179.30	53.10	3.60	236.00
499	O	177.00	56.00	3.00	236.00
	X	3	.16	.10	.29
200	E	202.10	59.90	4.10	266.10
299	O	199.00	63.00	4.00	266.00
	X	5	.16	1	.22
000	E	266.20	79.50	5.40	353.10
199	O	289.00	61.00	3.00	353.00
	X	1.61	4.31	1.07	6.99
TOTAL	E	847.10	251.00	17.10	1115.20
	O	847.00	251.00	17.00	1115.00
	X	2.91	7.30	3.43	13.64

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 161

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SCHOOLS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in English: Below Average [c]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 599	E	127.40	36.30	2.30	166.00
	O	112.00	53.00	1.00	166.00
	X	1.86	7.68	.74	10.28
300 499	E	169.60	48.40	3.00	221.00
	O	170.00	49.00	2.00	221.00
	X		.01	.33	.34
200 299	E	193.40	55.10	3.40	251.90
	O	190.00	58.00	4.00	252.00
	X	.06	.15	.11	.32
000 199	E	407.60	116.20	7.30	531.10
	O	426.00	96.00	9.00	531.00
	X	8.3	3.51	.40	4.74
TOTAL	E	898.00	256.00	16.00	1170.00
	O	898.00	256.00	16.00	1170.00
	X	2.75	1.35	1.58	1.568

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 102

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Social Studies: Below Average	Average	Above Average	Total
1000 UP[a]	E				
	O				
	X				
500 999	E	194.30	60.50	42.20	259.00
	O	190.00	62.00	7.00	259.00
	X	.10	.04	1.87	2.01
300 499	E	177.10	55.10	3.80	236.00
	O	175.00	60.00	1.00	236.00
	X	.03	.44	2.06	2.53
200 299	E	198.50	61.90	4.30	265.00
	O	195.00	66.00	4.00	265.00
	X	.07	.27	.02	.36
000 199	E	264.80	82.50	5.70	353.00
	O	275.00	72.00	6.00	353.00
	X	.39	1.34	.02	1.75
TOTAL	E	835.00	260.00	18.00	1113.00
	O	835.00	260.00	18.00	1113.00
	X	.59	2.09	3.97	6.65

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 149

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1950

School Size		Achievement in Social Studies: Below Average [b]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	12960	3270	370	16600
	O	11800	4600	200	16600
	X	104	541	78	723
300 499	E	17250	4360	490	22100
	O	18300	5200	600	22100
	X	52	162	25	239
800 299	E	19600	4950	560	25110
	O	19400	4700	1000	25100
	X	2	13	348	361
000 199	E	41690	10530	1180	53400
	O	44000	8600	800	53400
	X	128	354	122	804
TOTAL	E	91500	23110	2600	117210
	O	91500	23100	2600	117200
	X	286	1070	571	1927

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 184

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Natural Sciences: Below Average	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	177.90	722.50	89.60	2590.00
	O	164.00	770.00	180.00	2590.00
	X	1.09	.28	10.27	11.64
300 499	E	162.10	661.10	71.90	2361.10
	O	157.00	723.00	71.00	2360.00
	X	.16	.53	.10	.79
200 299	E	181.30	739.00	80.80	2640.00
	O	179.00	810.00	41.00	2640.00
	X	.03	.68	2.62	3.33
000 199	E	241.70	985.50	117.0	3519.00
	O	263.00	810.00	80.00	3520.00
	X	1.88	3.11	1.17	6.16
TOTAL	E	763.00	3111.00	370.00	11111.00
	O	763.00	3111.00	370.00	11111.00
	X	3.16	4.60	14.16	21.92

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 185

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1930

School Size		Achievement in Natural Sciences: Below Average [b]	Average	Above Average	Total
1000 and UP [a]	E				
	O				
	X				
500 - 999	E	112.60	47.60	4.60	165.00
	O	100.00	56.00	9.00	165.00
	X	1.41	1.46	1.68	4.57
300 - 499	E	148.10	62.60	6.30	217.00
	O	147.00	62.00	8.00	217.00
	X	1	1	1.46	4.46
200 - 299	E	171.30	72.40	7.30	251.00
	O	174.00	73.00	4.00	251.00
	X	4	1	1.49	1.54
000 - 199	E	363.00	153.40	15.50	531.90
	O	374.00	145.00	13.00	532.00
	X	33	1.46	1.40	1.19
TOTAL	E	795.00	336.00	33.90	1164.90
	O	795.00	336.00	34.00	1165.00
	X	1.79	1.96	6.03	9.78

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 126

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000 UP [a]	E				
	O				
	X				
500 999	E	159.40	85.70	11.80	256.90
	O	145.00	93.00	19.00	257.00
	X	1.30	.62	4.39	6.31
300 499	E	146.40	78.70	10.80	235.90
	O	134.00	91.00	11.00	236.00
	X	1.05	1.92		2.97
200 299	E	151.40	81.40	11.20	244.00
	O	152.00	82.00	10.00	244.00
	X		1	1.13	1.14
000 199	E	217.80	117.10	16.10	351.00
	O	244.00	97.00	10.00	351.00
	X	3.15	3.45	2.31	8.91
TOTAL	E	675.00	362.90	49.90	1087.80
	O	675.00	363.00	50.00	1088.00
	X	5.50	6.00	6.83	18.33

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 187

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN TWELVE-YEAR SCHOOLS, 1930

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000 Up [a]	E				
	O				
	X				
500 999	E	10280	5810	610	16900
	O	8800	7000	700	16500
	X	213	345	13	571
300 499	E	13710	7480	810	22000
	O	14900	6900	1000	22000
	X	46	128	45	219
200 299	E	15640	8540	920	25100
	O	16200	8100	800	25100
	X	20	23	16	59
000 199	E	33080	18060	1960	53100
	O	33200	18100	1800	53100
	X			13	13
TOTAL	E	72710	39690	4300	116700
	O	72700	39700	4300	116700
	X	279	496	87	862

[a] There were no schools in this school size category.

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 128

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1952

School Size	[b]	Psychological Categories: Below Average [c]	Average	Above Average	Total
1000	E	473.40	571.40	458.20	1503.00
UP	O	367.00	590.00	546.00	1503.00
	X	23.91	.61	16.62	41.34
500	E	345.80	416.70	334.20	1096.10
999	O	345.00	406.00	345.00	1096.00
	X		.28	.35	.63
300	E	187.70	226.60	181.70	596.00
499	O	275.00	207.00	114.00	596.00
	X	40.60	1.70	25.22	67.52
200	E	76.20	92.00	73.80	242.00
299	O	92.00	106.00	44.00	242.00
	X	3.28	2.13	12.03	17.44
000	E	13.50	16.30	13.10	42.90
199	O	17.00	14.00	12.00	43.00
	X	.92	.63	.10	1.65
TOTAL	E	1096.00	1323.00	1061.00	3480.00
	O	1096.00	1323.00	1061.00	3480.00
	X	66.71	5.05	54.52	126.28

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 189

CONTINGENCY DISTRIBUTION OF PSYCHOLOGICAL TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Psychological Categories: Below Average [c]	Average	Above Average	Total
1000	E	500.40	587.20	553.40	1641.00
UP	O	358.00	609.00	674.00	1641.00
	X	40.52	.81	26.28	67.61
500	E	255.80	300.20	282.90	838.90
999	O	276.00	292.00	269.00	839.00
	X	1.93	.22	.68	2.83
300	E	266.80	313.10	295.10	875.00
499	O	347.00	324.00	204.00	875.00
	X	24.11	.38	28.12	52.61
200	E	67.40	79.10	74.50	221.00
299	O	103.00	63.00	55.00	221.00
	X	18.80	3.28	5.10	27.18
000	E	32.60	38.30	36.10	107.00
199	O	37.00	30.00	40.00	107.00
	X	.59	1.80	.42	2.81
TOTAL	E	1123.00	1317.90	1242.00	3682.90
	O	1123.00	1316.00	1242.00	3681.00
	X	.8595	.6449	.6060	1.5304

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 190

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in English: Below Average [b]	Average [c]	Above Average	Total
1000	E	506.90	562.80	427.30	1499.00
UP	O	400.00	586.00	513.00	1499.00
	X	23.30	.96	17.19	41.45
500	E	371.40	410.60	311.90	1094.10
999	O	370.00	408.00	316.00	1094.00
	X	1	2	5	8
300	E	202.00	223.40	169.60	595.00
499	O	252.00	208.00	105.00	595.00
	X	31.68	1.05	24.61	57.35
200	E	82.20	90.90	69.00	242.10
299	O	109.00	88.00	45.00	242.00
	X	8.74	.9	8.35	1.718
000	E	14.60	16.10	12.30	43.00
199	O	18.00	14.00	11.00	43.00
	X	.79	.28	.16	1.23
TOTAL	E	1179.10	1304.00	990.10	3473.20
	O	1179.00	1304.00	990.00	3473.00
	X	64.52	2.41	50.36	117.29

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 151

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in English: Below Average	Average	Above Average	Total
1000	E	485[b]20	647[b]30	506[b]50	1639[c]00
UP	O	338[c]00	646[c]00	655[c]00	1639[c]00
	X	44[b]66		43[b]54	88[b]20
500	E	248[b]10	331[b]00	259[b]00	838[c]10
999	O	272[c]00	340[c]00	226[c]00	838[c]00
	X	2[b]30	25	4[b]20	6[b]75
300	E	258[b]70	345[b]20	270[b]10	874[c]00
499	O	333[c]00	347[c]00	194[c]00	874[c]00
	X	21[b]34	1	21[b]44	42[b]79
200	E	65[b]40	87[b]30	68[b]30	221[c]00
299	O	110[c]00	74[c]00	37[c]00	221[c]00
	X	30[b]42	2[b]03	14[b]34	46[b]79
000	E	31[b]70	42[b]30	33[b]10	107[c]10
199	O	36[c]00	46[c]00	25[c]00	107[c]00
	X	59	53	198	290
TOTAL	E	1089[b]10	1453[b]10	1137[c]00	3679[c]20
	O	1089[c]00	1453[c]00	1137[c]00	3679[c]00
	X	99[b]31	262	85[b]50	187[c]43

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 192

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size	[b]	Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	445.70	547.00	490.30	1483.00
UP	O	334.00	545.00	604.00	1483.00
	X	27.99	1	26.37	54.37
500	E	328.50	403.10	361.40	1093.00
999	O	356.00	396.00	341.00	1093.00
	X	2.30	.13	1.15	3.58
300	E	179.10	219.80	197.10	596.00
499	O	242.00	215.00	139.00	596.00
	X	22.09	1.11	17.13	39.33
200	E	72.70	89.30	80.00	242.00
299	O	89.00	103.00	50.00	242.00
	X	3.65	2.10	11.25	17.00
000	E	12.90	15.90	14.20	43.00
199	O	18.00	16.00	9.00	43.00
	X	2.02	.3	1.91	3.96
TOTAL	E	1038.90	1275.10	1143.00	3457.00
	O	1039.00	1275.00	1143.00	3457.00
	X	58.05	2.38	57.81	118.24

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 193

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS
1950

School Size	b	Achievement in Social Studies: Below Average c	Average	Above Average	Total
1000	E	502.40	592.50	532.10	1627.00
UP	O	363.00	578.00	686.00	1627.00
	X	36.68	1.35	44.51	83.54
500	E	258.80	305.20	274.10	838.10
999	O	290.00	311.00	237.00	838.00
	X	3.76	1.11	5.02	8.89
300	E	269.60	317.90	285.50	873.00
499	O	336.00	338.00	199.00	873.00
	X	16.35	1.27	26.21	43.83
200	E	65.20	80.50	72.30	221.00
299	O	101.00	77.00	43.00	221.00
	X	15.78	0.15	11.87	27.80
000	E	33.00	39.00	35.00	107.00
199	O	42.00	31.00	34.00	107.00
	X	2.47	1.65	.4	4.16
TOTAL	E	1132.00	1335.10	1199.00	3666.10
	O	1132.00	1335.00	1199.00	3666.00
	X	77.04	3.53	87.65	168.22

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-squares. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 19A

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1952

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	422.70	573.10	468.30	1464.10
UP	O	368.00	551.00	545.00	1464.00
	X	7.08	.85	12.56	20.49
500	E	314.40	426.30	348.30	1089.00
999	O	293.00	438.00	358.00	1089.00
	X	1.46	.32	.27	2.05
300	E	172.60	234.10	191.30	598.00
499	O	231.00	229.00	138.00	598.00
	X	19.76	1.11	14.85	34.72
200	E	69.90	94.70	77.40	242.00
299	O	85.00	109.00	48.00	242.00
	X	3.26	2.16	11.17	16.59
000	E	12.40	16.80	13.80	43.00
199	O	15.00	18.00	10.00	43.00
	X	.56	.10	1.06	1.72
TOTAL	E	992.00	1345.00	1099.10	3436.10
	O	992.00	1345.00	1099.00	3436.00
	X	32.12	3.54	39.91	75.57

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 195

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size	[b]	Achievement in Natural Sciences: Below Average [c]	Average	Above Average	Total
1000	E	495.80	608.60	515.20	1619.10
UP	O	431.00	569.00	619.00	1619.00
	X	8.35	2.58	20.91	31.84
500	E	256.70	315.40	267.00	839.10
999	O	248.00	334.00	257.00	839.00
	X	.30	1.10	.38	1.78
300	E	266.70	327.30	277.50	872.00
499	O	314.00	352.00	206.00	872.00
	X	8.39	1.79	18.42	28.60
200	E	67.60	83.10	70.30	221.00
299	O	86.00	86.00	49.00	221.00
	X	5.01	.00	6.45	11.46
000	E	32.70	40.20	34.00	106.90
199	O	40.00	34.00	33.00	107.00
	X	1.63	.97	.4	2.64
TOTAL	E	1119.00	1375.10	1164.00	3658.10
	O	1119.00	1375.00	1164.00	3658.00
	X	23.68	6.54	46.20	76.42

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 196

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average [b]	Average	Above Average	Total
1000	E	451.90	559.70	464.40	1476.00
UP	O	393.00	537.00	546.00	1476.00
	X	7.68	.92	14.34	22.94
500	E	334.10	413.70	343.30	1091.10
999	O	343.00	423.00	325.00	1091.00
	X	.24	.21	.98	1.43
300	E	182.20	225.60	187.20	595.00
499	O	217.00	228.00	150.00	595.00
	X	6.65	.03	7.39	14.07
200	E	74.10	91.80	76.10	242.00
299	O	89.00	100.00	53.00	242.00
	X	3.00	.73	7.01	10.74
000	E	10.70	13.30	11.00	35.00
199	O	11.00	16.00	8.00	35.00
	X	.1	.57	.84	1.42
TOTAL	E	1053.00	1304.10	1082.00	3439.10
	O	1053.00	1304.00	1082.00	3439.00
	X	17.58	2.46	30.56	50.60

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 197

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR ALL SENIORS IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000	E	45950	65530	49620	161100
UP	O	37100	63400	60900	161100
	X	17.05	.69	2.30	4.204
500	E	23820	33960	25720	83500
999	O	24600	35100	23800	83500
	X	.26	.38	1.43	.207
300	E	24900	35510	26890	87300
499	O	30200	37200	19900	87300
	X	1.128	.80	1.817	3.025
200	E	6300	8990	6810	22100
299	O	8400	8500	5200	22100
	X	.700	.27	.381	1.108
000	E	3020	4310	3260	10590
199	O	3700	4100	2800	10600
	X	1.55	.12	.65	2.32
TOTAL	E	103990	148300	112300	364590
	O	104000	146300	112300	364900
	X	37.14	2.26	4.836	8.776

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 198

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in English			
		Below Average [b] [c]	Average	Above Average	Total
1000 UP	E	10.80	142.40	390.80	544.00
	O	6.00	128.00	410.00	544.00
	X	2.13	1.46	.94	4.53
500 999	E	6.80	89.80	246.40	343.00
	O	8.00	96.00	239.00	343.00
	X	.21	.43	.22	.86
300 499	E	2.30	29.80	81.90	114.00
	O	5.00	31.00	78.00	114.00
	X	3.17	.05	.19	3.41
200 299	E	.90	11.80	32.30	45.00
	O	2.00	19.00	24.00	45.00
	X	1.34	4.39	2.13	7.86
000 199	E	.20	3.10	8.60	11.90
	O		3.00	9.00	12.00
	X	.78	.09	.03	.90
TOTAL	E	21.00	276.90	760.00	1057.90
	O	21.00	277.00	760.00	1058.00
	X	.763	.642	.351	1.756

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 199

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	19.50	231.80	421.70	673.00
	O	14.00	201.00	458.00	673.00
	X	1.55	4.09	3.12	8.76
500 999	E	7.80	92.30	167.90	268.00
	O	6.00	106.00	156.00	268.00
	X	.42	2.03	.84	3.29
300 499	E	5.90	70.20	127.80	203.90
	O	8.00	81.00	115.00	204.00
	X	.75	1.66	1.28	3.69
200 299	E	1.60	18.90	34.50	55.00
	O	5.00	23.00	27.00	55.00
	X	7.23	.89	1.63	9.75
000 199	E	1.20	13.80	25.10	40.10
	O	3.00	16.00	21.00	40.00
	X	2.78	.37	.67	3.82
TOTAL	E	36.00	427.00	777.00	1240.00
	O	36.00	427.00	777.00	1240.00
	X	12.73	9.04	7.54	29.31

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 200

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size	[b]	Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	8.20	120.10	41.70	542.00
up	O	7.00	98.00	437.00	542.00
	X	.18	4.07	1.31	5.56
500	E	5.20	76.20	26.60	344.00
999	O	7.00	85.00	252.00	344.00
	X	.62	1.02	43.00	2.07
300	E	1.70	25.30	8.700	114.00
499	O	1.00	30.00	83.00	114.00
	X	.29	.87	18.00	1.34
200	E	.70	9.80	3.360	44.10
299	O	1.00	17.00	26.00	44.00
	X	.13	5.29	1.72	7.14
000	E	.20	2.70	.920	12.10
199	O		4.00	8.00	12.00
	X	.22	.64	18.00	10.4
TOTAL	E	16.00	234.10	80.610	1056.20
	O	16.00	234.00	806.00	1056.00
	X	1.44	1.89	3.82	17.15

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 20I

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in Social Studies: Below Average [b]	Average	Above Average	Total
1000	E	16.20	165.70	488.00	669.90
UP	O	800	1330.00	529.00	6700.00
	X	4.15	6.45	3.45	14.05
500	E	6.50	66.30	195.20	268.00
999	O	14.00	79.00	175.00	268.00
	X	8.65	2.43	2.09	13.17
300	E	4.90	50.50	148.60	204.00
499	O	5.00	68.00	131.00	204.00
	X		6.06	2.08	8.14
200	E	1.30	13.60	40.10	55.00
299	O	1.00	18.00	36.00	55.00
	X	.7	1.42	.42	1.91
000	E	1.00	9.90	29.10	40.00
199	O	2.00	5.00	30.00	40.00
	X	1.01	.38	.4	1.43
TOTAL	E	29.90	306.00	901.00	1236.90
	O	30.00	306.00	901.00	1237.00
	X	13.83	16.74	8.08	38.70

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 202

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	15.90	150.10	373.00	539.00
UP	O	18.00	144.00	377.00	539.00
	X	.28	.25	.04	.57
500	E	10.10	95.80	238.10	344.00
999	O	7.00	88.00	249.00	344.00
	X	.95	.64	.50	2.09
300	E	3.30	31.50	78.20	113.00
499	O	3.00	40.00	70.00	113.00
	X	.03	2.29	.86	3.18
200	E	1.30	12.30	30.40	44.00
299	O	1.00	17.00	26.00	44.00
	X	.07	1.80	.64	2.51
000	E	.40	3.30	8.30	12.00
199	O	2.00	4.00	6.00	12.00
	X	6.42	.18	.68	7.28
TOTAL	E	31.00	29.300	728.00	105.200
	O	31.00	29.300	728.00	105.200
	X	7.75	5.16	2.72	15.63

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 203

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in Natural Sciences: Below Average[b]	Average	Above Average	Total
1000	E	29[c]30	202[c]80	437[c]00	669[c]10
UP	O	32[c]00	186[c]00	451[c]00	669[c]00
	X	.25	1.39	.45	2.09
500	E	11[c]80	81[c]50	175[c]70	269[c]00
999	O	10[c]00	84[c]00	175[c]00	269[c]00
	X	.27	.8		1.35
300	E	8[c]80	60[c]90	131[c]30	201[c]00
499	O	11[c]00	71[c]00	119[c]00	201[c]00
	X	.55	1.68	1.15	3.38
200	E	2[c]40	16[c]70	35[c]90	55[c]00
299	O	1[c]00	18[c]00	36[c]00	55[c]00
	X	.92	1.0		.92
000	E	1[c]80	12[c]10	26[c]10	40[c]00
199	O		15[c]00	25[c]00	40[c]00
	X	1.81	.70	.5	2.56
TOTAL	E	54[c]10	374[c]00	806[c]00	1234[c]10
	O	54[c]00	374[c]00	806[c]00	1234[c]00
	X	.370	.395	1.65	.930

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 20[a]

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Mathematics: Below Average	Average	Above Average	Total
1000	E	31.40	146.50	365.10	543.00
UP	O	24.00	136.00	383.00	543.00
	X	1.74	.75	3.88	3.37
500	E	19.90	92.80	231.30	344.00
999	O	27.00	100.00	217.00	344.00
	X	2.53	.56	.88	3.97
300	E	6.50	30.50	76.00	113.00
499	O	7.00	29.00	77.00	113.00
	X	.4	.7	1.	1.2
200	E	2.50	11.90	29.60	44.00
299	O	3.00	14.00	27.00	44.00
	X	.10	.37	.23	.70
000	E	.70	3.20	8.10	12.00
199	O		6.00	6.00	12.00
	X	.72	2.45	.59	3.76
TOTAL	E	61.00	284.90	710.10	1056.00
	O	61.00	285.00	710.00	1056.00
	X	5.13	4.20	2.59	11.92

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 205

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH ABOVE AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000	E	32.50	212.10	421.50	666.10
UP	O	28.00	199.00	439.00	666.00
	X	.62	.51	.73	215
500	E	13.10	85.30	169.60	268.00
999	O	10.00	94.00	164.00	268.00
	X	.73	.89	.19	181
300	E	9.80	64.30	127.80	201.90
499	O	19.00	65.00	118.00	202.00
	X	8.64	1	.75	9.40
200	E	2.70	17.50	34.80	55.00
299	O		20.00	35.00	55.00
	X	2.70	.36		3.06
000	E	1.90	12.70	25.30	39.90
199	O	3.00	14.00	23.00	40.00
	X	.64	.13	.22	.99
TOTAL	E	60.00	391.90	779.00	1230.90
	O	60.00	392.00	779.00	1231.00
	X	13.33	2.20	1.89	17.42

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 206

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size	[b]	Achievement in English: Below Average [c]	Average	Above Average	Total
1000	E	131.50	326.40	131.10	589.00
UP	O	121.00	327.00	141.00	589.00
	X	.84	.75		1.59
500	E	90.70	225.00	90.40	406.10
999	O	87.00	227.00	92.00	406.00
	X	.15	.02	.03	.20
300	E	46.00	114.10	45.80	205.90
499	O	50.00	120.00	36.00	206.00
	X	.35	.31	2.10	2.76
200	E	23.70	58.70	23.60	106.00
299	O	36.00	48.00	22.00	106.00
	X	6.38	1.95	.11	8.44
000	E	3.10	7.80	3.10	14.00
199	O	1.00	10.00	3.00	14.00
	X	1.44	.63		2.07
TOTAL	E	295.00	732.00	294.00	1321.00
	O	295.00	732.00	294.00	1321.00
	X	9.16	2.91	2.99	15.06

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 207

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in English: Below Average	Average	Above Average	Total
1000	E	1321.0	3220.0	1538.0	6079.0
UP	O	1010.0	3210.0	1860.0	6080.0
	X	7.32	1.0	6.74	14.06
500	E	634.0	1547.0	739.0	2921.0
999	O	750.0	1520.0	650.0	2920.0
	X	2.08	.5	1.07	3.20
300	E	702.0	1711.0	817.0	3230.0
499	O	820.0	1700.0	710.0	3230.0
	X	1.98	1.1	1.40	3.35
200	E	137.0	334.0	159.0	630.0
299	O	230.0	320.0	80.0	630.0
	X	6.31	1.6	3.93	10.30
000	E	65.0	159.0	76.0	300.0
199	O	50.0	220.0	30.0	300.0
	X	3.7	23.4	27.8	54.9
TOTAL	E	2860.0	6971.0	3329.0	13160.0
	O	2860.0	6970.0	3330.0	13160.0
	X	18.06	2.46	15.92	36.44

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 208

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size	[b]	Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	118.30	326.10	134.60	579.00
UP	O	108.00	322.00	149.00	579.00
	X	.90	.05	1.54	2.49
500	E	82.90	228.70	94.40	406.00
999	O	92.00	230.00	84.00	406.00
	X	1.00	.01	1.15	2.16
300	E	42.30	116.60	48.10	207.00
499	O	43.00	113.00	51.00	207.00
	X	.01	.11	.17	.29
200	E	21.70	59.70	24.60	106.00
299	O	22.00	64.00	20.00	106.00
	X		.31	.86	1.17
000	E	2.90	7.90	3.30	14.10
199	O	3.00	10.00	1.00	14.00
	X	.02	.59	1.64	2.25
TOTAL	E	268.10	739.00	305.00	1312.10
	O	268.00	739.00	305.00	1312.00
	X	.193	.107	5.36	6.36

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 209

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size	[b]	Achievement in Social Studies: Below Average [c]	Average	Above Average	Total
1000	E	143.40	333.60	125.00	602.00
UP	O	129.00	328.00	145.00	602.00
	X	1.45	.09	3.20	4.74
500	E	69.50	161.80	60.60	291.90
999	O	80.00	155.00	57.00	292.00
	X	1.59	.29	.21	.209
300	E	76.90	179.00	67.10	323.00
499	O	81.00	181.00	61.00	323.00
	X	.22	.03	.55	.79
200	E	15.00	34.90	13.10	63.00
299	O	14.00	44.00	5.00	63.00
	X	.67	2.37	5.01	7.45
000	E	7.10	16.60	6.20	29.90
199	O	8.00	18.00	4.00	30.00
	X	.13	.12	.80	1.05
TOTAL	E	311.90	725.90	272.00	1309.80
	O	312.00	726.00	272.00	1310.00
	X	.346	.289	.977	1.612

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 210

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	119.20	306.90	141.90	568.00
UP	O	120.00	301.00	147.00	568.00
	X	.1	.11	.18	.30
500	E	85.20	219.40	101.40	406.00
999	O	84.00	230.00	92.00	406.00
	X	.2	1.51	1.87	1.40
300	E	43.40	111.90	51.70	207.00
499	O	42.00	105.00	60.00	207.00
	X	.5	.43	1.33	1.81
200	E	22.20	57.30	26.50	106.00
299	O	26.00	58.00	22.00	106.00
	X	.65	.1	.76	1.42
000	E	2.90	7.60	3.50	14.00
199	O	1.00	9.00	4.00	14.00
	X	1.28	.26	.10	1.64
TOTAL	E	272.90	703.10	325.00	1301.00
	O	273.00	703.00	325.00	1301.00
	X	.01	.32	.24	.57

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 211

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	150.50	306.00	144.50	601.00
UP	O	159.00	289.00	153.00	601.00
	X	.48	.94	.50	1.92
500	E	73.10	148.70	70.20	292.00
999	O	69.00	152.00	71.00	292.00
	X	.23	.07	.01	.31
300	E	81.10	165.00	77.90	324.00
499	O	71.00	179.00	74.00	324.00
	X	1.26	1.19	.20	2.65
200	E	15.80	32.10	15.10	63.00
299	O	18.00	34.00	11.00	63.00
	X	.31	.11	1.11	1.53
000	E	7.50	15.30	7.20	30.00
199	O	11.00	13.00	6.00	30.00
	X	1.64	.35	.21	2.20
TOTAL	E	328.00	667.10	314.90	1310.00
	O	328.00	667.00	315.00	1310.00
	X	3.92	2.66	2.03	8.61

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 212

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1931

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000	E	142.10	284.70	145.20	572.00
UP	O	151.00	273.00	148.00	572.00
	X	.56	.48	.05	1.09
500	E	100.90	202.10	103.10	406.10
999	O	98.00	214.00	94.00	406.00
	X	.08	.70	.60	1.38
300	E	51.20	102.50	52.30	206.00
499	O	43.00	99.00	64.00	206.00
	X	1.31	.12	2.62	4.05
200	E	26.30	52.60	26.90	106.00
299	O	29.00	55.00	22.00	106.00
	X	.28	.09	.89	1.26
000	E	2.50	5.00	2.50	10.00
199	O	2.00	6.00	2.00	10.00
	X	.12	.25	.15	.52
TOTAL	E	323.00	647.10	330.00	1300.10
	O	323.00	647.00	330.00	1300.00
	X	2.35	1.64	4.51	8.50

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 213

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size	b	Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	140.60	320.70	138.70	600.00
UP	O	136.00	315.00	149.00	600.00
	X	.15	.10	.76	1.01
500	E	67.70	154.50	66.80	289.00
999	O	66.00	156.00	67.00	289.00
	X	.04	.01		.05
300	E	75.90	173.20	74.90	324.00
499	O	80.00	177.00	67.00	324.00
	X	.22	.08	.83	1.13
200	E	14.80	33.70	14.60	63.00
299	O	16.00	33.00	14.00	63.00
	X	.10	.02	.02	.14
000	E	7.00	16.00	6.90	29.90
199	O	8.00	17.00	5.00	30.00
	X	.14	.07	.53	.74
TOTAL	E	306.00	698.10	301.90	1306.00
	O	306.00	698.00	302.00	1306.00
	X	.65	.28	2.14	3.07

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE F14

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
1000	E	263[.]00	93[.]30	9[.]70	366[.]00
UP	O	229[.]00	124[.]00	13[.]00	366[.]00
	X	4[.]40	10[.]10	1[.]12	15[.]62
500	E	247[.]20	87[.]70	9[.]10	344[.]00
999	O	256[.]00	79[.]00	9[.]00	344[.]00
	X	[.]31	[.]86		1[.]17
300	E	197[.]60	70[.]10	7[.]30	275[.]00
499	O	214[.]00	55[.]00	6[.]00	275[.]00
	X	1[.]36	3[.]25	[.]23	4[.]84
200	E	66[.]10	23[.]60	2[.]40	92[.]00
299	O	70[.]00	21[.]00	1[.]00	92[.]00
	X	[.]23	[.]27	[.]82	1[.]32
000	E	12[.]20	4[.]30	[.]50	17[.]00
199	O	17[.]00			17[.]00
	X	1[.]91	4[.]37	[.]87	7[.]15
TOTAL	E	786[.]10	278[.]90	29[.]00	1094[.]00
	O	786[.]00	279[.]00	29[.]00	1094[.]00
	X	[.]821	1[.]885	[.]304	3[.]010

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 21[illegible]

CONTINGENCY DISTRIBUTION OF ENGLISH TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1958

School Size		Achievement in English			
		Below Average [b]	Average	Above Average	Total
1000	E	24450	10490	860	35800
UP	O	22300	12400	1100	35800
	X	189	348	67	604
500	E	18990	8140	670	27800
999	O	19100	8200	500	27800
	X	1	1	43	45
300	E	23700	10170	830	34700
499	O	24300	9600	800	34700
	X	15	32	1	48
200	E	7030	3020	250	10300
299	O	8200	1900	200	10300
	X	195	415	10	620
000	E	2530	1080	90	3700
199	O	2800	800	100	3700
	X	30	75	9	114
TOTAL	E	76700	32900	2700	112300
	O	76700	32900	2700	112300
	X	430	871	130	1431

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 216

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Social Studies			
		Below Average [b] [c]	Average	Above Average	Total
1000	E	250.30	100.10	10.60	361.00
UP	O	219.00	125.00	17.00	361.00
	X	3.91	6.19	3.86	13.96
500	E	234.30	93.70	9.90	337.90
999	O	252.00	81.00	5.00	338.00
	X	1.34	1.72	2.43	5.49
300	E	194.10	77.60	8.30	279.90
499	O	203.00	72.00	5.00	280.00
	X	.41	.40	1.25	2.06
200	E	64.50	25.80	2.70	93.00
299	O	66.00	22.00	5.00	93.00
	X	.03	.56	1.96	2.55
000	E	11.80	4.70	.50	17.00
199	O	15.00	2.00		17.00
	X	.89	1.56	.51	2.96
TOTAL	E	755.00	301.90	31.90	1088.80
	O	755.00	302.00	32.00	1089.00
	X	6.58	10.43	10.01	27.02

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 217

CONTINGENCY DISTRIBUTION OF SOCIAL STUDIES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size		Achievement in Social Studies			
		Below Average [b]	Average	Above Average	Total
1000	E	250.60	96.10	8.20	354.90
UP	O	226.00	117.00	12.00	355.00
	X	2.42	4.55	1.76	8.73
500	E	196.30	75.30	6.50	278.10
999	O	196.00	77.00	5.00	278.00
	X		.4	.35	.39
300	E	244.30	93.70	8.00	346.00
499	O	250.00	89.00	7.00	346.00
	X	.13	.24	.13	.50
200	E	72.70	27.50	2.40	103.00
299	O	86.00	15.00	2.00	103.00
	X	2.43	5.96	.7	8.46
000	E	26.10	10.00	.90	37.00
199	O	32.00	5.00		37.00
	X	1.34	2.51	.90	4.75
TOTAL	E	790.00	303.00	26.00	1119.00
	O	790.00	303.00	26.00	1119.00
	X	6.32	13.30	3.21	22.83

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 218

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Natural Sciences			
		Below Average [b]	Average	Above Average	Total
1000	E	226.80	115.00	15.20	357.00
UP	O	230.00	106.00	21.00	357.00
	X	.05	.70	2.21	2.96
500	E	214.70	108.90	14.40	338.00
999	O	202.00	120.00	16.00	338.00
	X	.75	1.13	.18	2.06
300	E	176.50	89.50	11.80	278.00
499	O	186.00	84.00	8.00	278.00
	X	.50	.35	1.22	2.07
200	E	59.10	30.00	4.00	93.10
299	O	58.00	34.00	1.00	93.00
	X	.02	.63	2.25	2.80
000	E	10.80	5.50	.70	17.00
199	O	12.00	5.00	.00	17.00
	X	.14	.06	.70	.90
TOTAL	E	688.00	349.00	46.10	1083.10
	O	688.00	349.00	46.00	1083.00
	X	1.46	2.77	6.56	10.79

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE #19

CONTINGENCY DISTRIBUTION OF NATURAL SCIENCES TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size	b	Achievement in Natural Sciences: Below Average c	Average	Above Average	Total
1000	E	230.90	104.60	13.50	349.00
UP	O	240.00	94.00	15.00	349.00
	X	1.36	1.07	.17	1.60
500	E	183.90	83.30	10.70	277.90
999	O	169.00	98.00	11.00	278.00
	X	1.21	2.59	1	3.81
300	E	229.60	104.00	13.40	347.00
499	O	232.00	102.00	13.00	347.00
	X	.3	.4	.1	.8
200	E	66.10	30.90	4.00	103.00
299	O	67.00	34.00	2.00	103.00
	X	.2	.31	1.00	1.33
000	E	24.50	11.10	1.40	37.00
199	O	29.00	6.00	2.00	37.00
	X	.83	2.35	.26	3.44
TOTAL	E	737.00	333.90	43.00	1113.90
	O	737.00	334.00	43.00	1114.00
	X	2.45	6.36	1.45	10.26

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 22G

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1951

School Size		Achievement in Mathematics			
		Below Average [b]	Average	Above Average	Total
1000 UP	E	223.00	124.00	14.00	361.00
	O	218.00	128.00	15.00	361.00
	X	11	13	7	31
500 999	E	210.60	117.10	13.20	340.90
	O	218.00	109.00	14.00	341.00
	X	26	56	5	87
300 499	E	170.50	94.80	10.70	276.00
	O	167.00	100.00	9.00	276.00
	X	7	29	27	63
200 299	E	56.80	31.60	3.60	92.00
	O	57.00	31.00	4.00	92.00
	X		1	4	5
000 199	E	8.00	4.50	.50	13.00
	O	9.00	4.00		13.00
	X	15	8	.52	75
TOTAL	E	668.90	372.00	42.00	1082.90
	O	669.00	372.00	42.00	1083.00
	X	59	107	95	261

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

TABLE 221

CONTINGENCY DISTRIBUTION OF MATHEMATICS TEST SCORES FOR SENIORS WITH BELOW AVERAGE PSYCHOLOGICAL SCORES IN JUNIOR-SENIOR HIGH SCHOOLS, 1950

School Size	[b]	Achievement in Mathematics: Below Average [c]	Average	Above Average	Total
1000	E	209.70	122.30	13.10	345.10
UP	O	207.00	120.00	18.00	345.00
	X	.3	.4	1.83	1.90
500	E	169.00	98.50	10.50	278.00
999	O	170.00	101.00	7.00	278.00
	X	.1	.6	1.17	1.84
300	E	210.90	123.00	13.10	347.00
499	O	203.00	130.00	14.00	347.00
	X	.30	.40	.6	.76
200	E	62.60	36.50	3.90	103.00
299	O	68.00	32.00	3.00	103.00
	X	.47	.56	.21	1.24
000	E	21.90	12.80	1.40	36.10
199	O	26.00	10.00		36.00
	X	.77	.62	1.40	2.79
TOTAL	E	674.10	393.10	42.00	1109.20
	O	674.00	393.00	42.00	1109.00
	X	1.58	1.68	4.67	7.93

[b] The entries in "E" rows are expected frequencies, the "O" rows observed frequencies, and the "X" rows the contributions to chi-square. The expected frequencies were computed to only one decimal.

[c] The location of the decimal point is indicated by the dotted line.

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BIOGRAPHICAL ITEMS

Ralph Carroll Boles was born in Notasulga, Alabama, February 26, 1914. He was graduated from the Macon County High School in 1932. He received both his Bachelor of Science (1937) and his Master of Science (1949) degrees in Education from the Alabama Polytechnic Institute, Auburn, Alabama.

Mr. Boles was employed as a high school mathematics teacher for two years and as an elementary principal for one year in the Public Schools of Gadsden, Alabama, during the period 1937-1940.

He entered the military service as a member of the Alabama National Guard in November, 1940, and later served with the field artillery in France, Belgium, and Germany. He was released from active service in January, 1946, with the rank of major.

He accepted an appointment as instructor in mathematics at the Alabama Polytechnic Institute in October, 1945, and was employed until February, 1950, when he was granted a leave of absence to complete his graduate work.

Mr. Boles is a member of the Baptist Church, Masonic Lodge, Lions International, Kappa Delta Pi, Phi Kappa Phi, and Phi Delta Kappa.

He married Willie Mae Murdett of Gadsden, Alabama, March 1, 1941. They have a son, Ralph Carroll, and a daughter, Barbara Jean.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of the committee. It was submitted to the Graduate Council and was approved as partial fulfillment of the requirements for the degree of Doctor of Education.

June, 1952

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